Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Company, Inc.

MORRIS BUCK, *Managing Editor*

Volume 66 New York, Saturday, December 12, 1925 *Number* 24

Physical Perfection Alone Is Not Enough

PLANS of the New Haven Railroad to improve the trolleys in Massachusetts returned to it are tentative, but it is expected that the work to be done will involve an expenditure of $5,000,000. Certain permissive legislation is needed in that state. It will be sought at the incoming session of the Legislature.

Both the Worcester and the Springfield street railways have suffered and suffered terribly in the last few years. One thing that stands out, perhaps, above all others is the widespread misunderstanding of the transportation problem on the part of the general public in the territory which is served by the companies. They do not seem to realize the essentiality of the electric railway service. That lesson needs to be driven home. A factor no less important than the Worcester *Gazette* had to be reassured by Vice-President Buckland of the New Haven about its intent. That paper did not question the sincerity of the company. It just did not see how $1,000,000 could be put into the local railway property. Terrible as was that reaction, the *Gazette* is not alone among the papers of the territory in its lack of appreciation of the place of the railway in the community.

Mr. Buckland's statement will, of course, help toward a better understanding of the matter. The local managements, however, need to attack the problem in a militant way. A spirit of good will and understanding must be engendered. Of course, not everything can be done that everybody expects, but if the public relations job is well done the majority will be satisfied and the others will be placated or mollified. If the local managements do not feel sure of themselves with respect to all of this work, there are many examples elsewhere in the industry that they can study. Some of these are close at hand, among companies more fortunately situated financially in the past than has been either the Worcester or the Springfield roads, but catering to a public that reacts as does the public of Springfield and Worcester.

Of course, the hope of the New Haven is to retrieve some of the money it has locked up in these properties. This is a big stake. It is estimated at more than $15,000,000. As previously indicated, the New Haven now stands ready to put in another $5,000,000. That, too, is a lot of money. It attests a willingness to go to great financial lengths at once to build up the properties. Good money will simply be going after bad unless the expenditure is accompanied on the part of the local managements with that intangible something which breeds good will at the same time it seeks perfection in the physical and engineering structures.

So far as the public authorities are concerned, they, too, should forget the past. They have not been without sin. They have a chance for constructive work as great as that of the railway managements. A wonderful opportunity really is before both them and the railway managements. The outcome depends very largely upon the spirit of magnanimity and helpfulness with which each side approaches the problem.

Cold Comfort for Municipal Ownership Advocates in Seattle Experience

WHY municipal ownership of local transportation facilities frequently finds favor with politicians is well illustrated by the experience of Seattle, as summarized recently by a newspaper of that city. In 1918, under private ownership, the railway lines employed 1,685 people. At that time no one-man cars were used. Six years later, under city ownership, the number of employees had increased to 2,113 despite the operation of many one-man cars and a reduction of some 12,000,000 in the number of passengers carried per annum by the street railway system.

During the last year of private operation, the total operating expenses were about $3,500,000, including $750,000 taxes. In two years the operating expenses had grown to $5,500,000 without taxes. Politicians may benefit by the increased numbers of employees and the larger disbursements, but certainly the public does not. Car riders are paying annually some $2,000,000 more than they used to, and the city as a whole is carrying the $750,000 taxes formerly borne by the railway.

Thus the record of inefficiency made at Seattle gives the advocates of municipal ownership little to gloat over. In some other countries, notably in Canada and Great Britain, city-owned transportation systems have given creditable performances. Here in the United States the few municipal railways have not had the same freedom from political influence. The many jobs to be filled and the considerable local purchases make the municipal street railway system a plum tree with luscious fruit for the politician. So thoughtful people must hesitate to place the conduct of important transportation service where the prospect of inefficient operation is so apparent as it is in the average American city.

Complete Local Transportation Includes Taxi Operation

PALAVER over the intended purchase of the taxis of Philadelphia by the Philadelphia Rapid Transit Company is the last thing Mr. Mitten wants. And he doesn't go around the bush to say so. He has outlined his plan; he wants to put it through. His reasons are given in *Service Talks* for Dec. 1. They are well made. Mr. Mitten says that this is no time for the kind of idle bickering and ill-considered chatter which has retarded every transit improvement in the history of Philadelphia. He says criticism should be constructive. Let the critics speak, but let them speak promptly.

Mr. Mitten is right. Probably only the fact that the

proposal appears unusual is causing hesitation. Any one who studies traffic conditions in large cities is bound to be impressed with the rapid increase during recent years in the number of taxis in operation on city streets. Many of these moving taxis spend most of their time cruising on busy streets and avenues seeking business where it is likely to be good and neglecting the thinly populated districts. With all taxis under one control it is obvious there would be a considerable saving in waste mileage, probably a material reduction in the total number of taxis required, and much better coverage of taxi service for the city as a whole.

To many people, taxicab operation may seem far afield from the service which electric railways are accustomed to give, namely, mass transportation on defined routes. Actually, there are marked advantages in the operation of all or most of the taxis in a large city by one corporation. Where there is a monopoly of this kind, there are many reasons for this one corporation being the electric railway. What organization is better fitted to conduct taxi service than the local transportation company? It is already operating both trolley car and bus service. A company of this kind has carhouses, garages, and repair shops for housing and maintaining existing equipment. It also has its dispatching system, transportation organization and traffic experts and is constantly making studies of changes and fluctuations in traffic flow. In some cases, it is even probable that combination trips by taxi and by car or bus could be furnished, if desired.

As has been pointed out before in ELECTRIC RAILWAY JOURNAL, the idea that an electric railway is in a good position to take over and administer a taxi monopoly is not new. The fact that the question keeps coming up shows that the plan has advantages. The concrete suggestion that this may be done in Philadelphia seems to bring such an outcome nearer. It is an outcome about which the public need feel neither fear nor trepidation.

Railways Still Have Adherents in Some of the Smaller Communities

THAT all-wise forecast, at one time perennial and now at least weekly, that buses will supplant the electric railway appears to get many a jolt all the more staggering because the conviction appeared sound that if the buses didn't supplant the cars in large cities they unquestionably would in cities of 50,000 population and in the smaller towns. Wherein the prediction was error-proof is the very point on which the facts play traitor to the prediction. Within the past two months five outstanding examples of the electric railway being preferred to the bus include Lorain, Port Arthur, Oskaloosa, Beech Grove and Whitefish Bay. In these localities, widely separated in distance and desire, residents voted for the retention of the street car. In some of these communities the bus had already been tried.

Lorain, Ohio, with a population of 38,000, cast 8,000 ballots on Nov. 3 with a majority of about 2,500 against the buses. In Port Arthur, Tex., the traction company has resumed service, following approval by the voters of a franchise to it which provided for elimination of the jitney. In Oskaloosa, with more than 9,400 people at a special election on the proposition to amend the charter to permit bus operation, the result showed a preference for the street car. Beech Grove, a suburb of Indianapolis, with a population of 1,500 people, voted more than two to one for the continuation of railway service to Indianapolis. In Whitefish Bay, a suburb of Milwaukee, the company restored its electric railway service after a 60-day trial period of the buses. The tangible evidence of 313 votes against 118 showed that the cars were more satisfactory.

True, these are only isolated examples, but they speak louder than any one's *ipse dixit* that buses will supplant the railway. That prediction may yet be realized, but meanwhile smaller cities are finding satisfaction in their railway systems and are voting for a continuance of railway service.

False Conclusions Follow Wrong Interpretation of Statistics

GROSS ignorance of the transportation situation in London is shown in the attempt of W. F. Evans, president of the Detroit Motor Bus Company, to prove that the bus is superior to the street car in handling mass transportation. Speaking at the recent meeting of the Mid-West Electric Railway Association, he stated that the combined street railway systems of London carried 298,356,083 passengers in 1924, while the London General Omnibus Company carried 1,158,411,377 passengers. An abstract of his paper appears elsewhere in this issue. The figures, he says, are taken "from the authentic reports of the two systems" and cast doubt upon the figures which the committee on foreign operation of the American Electric Railway Association brought back from London last year.

True enough, Mr. Evans' figures of passengers carried and vehicle-miles operated are those of the company reports. Two important elements necessary for correct understanding of the situation, however, appear to have escaped him. In British terminology a "railway" corresponds to what is called in this country a rapid transit line or a steam railroad. The word is never used to denote a street railway—in England that is always called a "tramway." The figures used in Mr. Evans' comparison are those of the Underground group of railways, or rapid transit lines, not those of the tramways or surface car lines. Moreover, he has omitted altogether the Metropolitan & East London Railways, carrying some 170,000,000 passengers per year, and the rapid transit traffic of trunk line railroads, numbering about 350,000,000 passengers. Had these operations been included in the total, the combined "railway" passengers would have been about 1,000,000,000 instead of 298,356,083 as given by Mr. Evans. The slight decrease in the number of railway passengers in 1924 as compared with 1923, which he ascribes to the waning popularity of the rail systems, was in reality due largely to the fact that the City & South London Railway was under reconstruction for a great part of the year.

Tramways in London carry about 1,050,000,000 passengers per year, but their routes do not pass through the shopping and financial districts. The number of passengers carried by the buses is augmented by many short-haul riders in these areas. Comparison of the total traffic figures of trains and buses has little significance so far as the relative importance of the services is concerned.

Discrepancies between Mr. Evans' data and the figures of the committee on foreign operation are thus seen to be due to his own misunderstanding of the situation in London.

Furnishing Co-ordinated Transportation on the North Jersey Coast

Street Cars, Buses and Taxicabs, All Operated Under One Management, Supply Regular Local Routes, Interurban and Sightseeing Lines and Individual Service—Railway Lines Have Been Rehabilitated and Buses Used to Build Up a New Business to Recently Developed Residential Sections as Well as to Supplement Trolley Service During the Seasonal Peak

By H. T. Pritchard
Vice-President Utilities Power & Light Corporation, New York City

Sightseeing Buses Along the Famous Ocean Boulevard Between Long Branch, Asbury Park and Manasquan Have Proved a Profitable Source of Revenue

BEGINNING with an electric railway system that had been operating with annually decreasing revenues for a number of years, a newly organized company, the Coast Cities Railway, Allenhurst, N. J., has built up a system that is giving transportation of all kinds to the residents and visitors to the northern New Jersey coast resorts between Long Branch and Manasquan. A co-ordinated system has been worked out which includes street cars, regular bus routes, sightseeing buses and taxicabs.

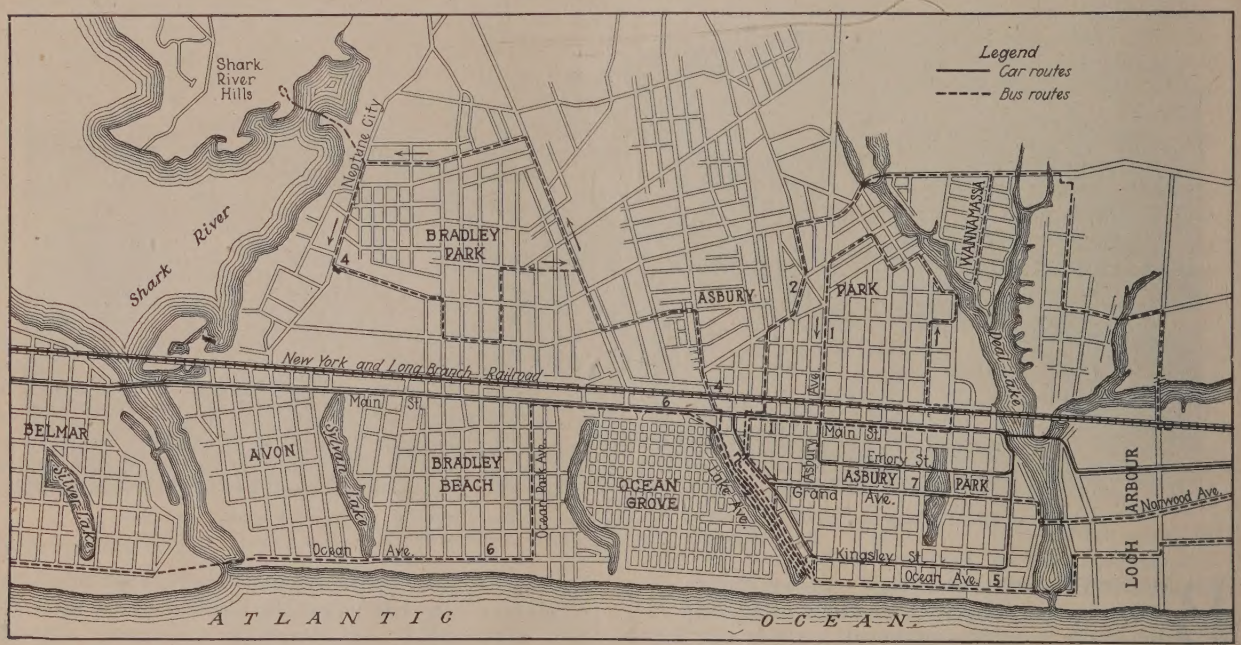
The resort region of the North Jersey coast, of which Asbury Park is the geographical and commercial center, comprises in its most important part a strip of territory about 20 miles in length, extending from Long Branch on the north to Manasquan on the south. This territory, containing as it does about a dozen different contiguous municipalities and boroughs, is built up and developed from one end to the other, extending back from the coast from 1 to 2 miles, so that it is essentially a single urban community with a permanent winter population of between 60,000 and 75,000 and a summer population estimated at more than 500,000. Asbury Park, the commercial and trade center, is the largest unit in this aggregation of communities. South of it are Ocean Grove, Bradley Beach, Avon, Belmar, Como, Spring Lake, Sea Girt and Manasquan, and north of it Loch Arbor, Allenhurst, Deal and Long Branch, in the order named. These communities merge one into the other so completely that the boundary lines between them exist either as streets or as small natural boundaries, such as Deal Lake, a long, narrow lake which separates Asbury Park and Loch Arbor, or Wesley Lake, which sets Ocean Grove off from Asbury Park.

Considering the facts that this community extends over a strip of territory along the coast 20 miles in length and something over 1 mile in width, or about 30 square miles total area; that its winter population in this area is only about one-sixth of its summer population, and that the period between the influx of summer residents and their departure averages not much over three months (July 4 to Labor Day); considering, also, the fact that during this three-month seasonal peak there are many days, especially weekends, when the influx of transient or one-day visitors swells the population by from 50,000 to 100,000, most of which travels through Asbury Park, it will be recognized that the transportation problem is one that is unique and particularly difficult both in its physical and economic aspects.

Prior to 1924 the only means of transportation other than the steam railroad through this composite community was a double-track street railway then known as the Atlantic Coast Electric Railway, which extended a distance of 22 miles from Manasquan on the south to

North Long Branch on the north, running parallel to and about 1 mile west of the coast line. This railway for most of its route followed the main highway artery running north and south, which took it through the commercial or business districts of Asbury Park and Long Branch, the two largest units in this group of communities. In Asbury Park, which constituted the operating center of this railway line, there was a double-track branch, which ran as a loop about 3½ miles in length, furnishing transportation for the beach section.

The seasonal traffic requirements were such as to require a maximum of equipment during the summer season and a minimum during the winter, and in the years when open trolley car riding was most popular this meant a large number of open cars, which were placed in service in May or June and taken off in September, and a much smaller number of closed cars, which operated during the remainder of the year. All



Local Car and Bus Lines Give an Adequate Transportation Service in Asbury Park and Surrounding Resort Towns

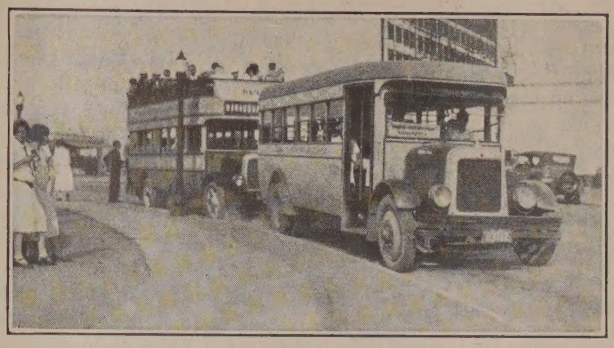
beyond the trolley zone, co-ordinating the service of these lines with the trolley service and providing for interchange of passengers. At the same time the company established new bus lines designed to accommodate the summer patronage of this section, on sightseeing routes operated along the famous Ocean Boulevard, which traverses this section from end to end close to the shore line. These latter routes, served with double-deck buses, were established, one running north from Asbury Park to Long Branch, on the Boulevard, and the other from Asbury Park to Manasquan. These two lines, parallel to the trolley line but at a distance of over ½ mile from it, and operating during the four heaviest traffic months of the year, May 15 to Sept. 15, relieved greatly the heavy burden thrown on the trolley system during that period. The establishing of these sightseeing bus lines constituted a decided innovation in transportation in this section. Nothing like

of these were two-man cars. With the advent of the private automobile and the bus, and the coincident decrease in use of trolley cars that resulted in many places, radical changes became necessary in methods of operation.

When the Atlantic Coast Electric Railway was taken over by its present management, reorganized and named the Coast Cities Railway, bus transportation had not yet taken hold very strongly in the shore districts. A few independent lines had started, but they were relatively unimportant, and with one exception did not establish competition with the street railway. It was apparent, however, that prompt action would have to be taken by the transportation company in extending and amplifying its service if it was to maintain its position and fortify itself against competition represented by other means of transportation than street cars.

It therefore promptly organized a new bus company, the Atlantic Coast Transportation Company, and immediately laid out a comprehensive system of feeder bus lines centering in Asbury Park to serve sections it had ever been attempted by a transportation company before, outside of the large cities, and because the demand for service on such lines could exist only during the summer months, the company's management had to face the hazard of not receiving sufficient income over a four-month period to justify the investment. To complicate the operating problem, the company was obliged to take out a license for each bus in each of the boroughs and cities traversed, which included them all, from one end of the district to the other. Moreover, one-man operation, in the interest of economy, could not be adopted for these double-deck buses; safety required two men. The unit costs of operation for these buses were therefore certain to be higher than for the single-deck buses. Regardless of such deterrents, it was felt these lines, when established, would be a success, and the experiment was started with six coaches. They were so satisfactory that the company decided to make them a permanent part of its transportation service and put additional equipment into use the second year.

Single-Deck Buses Are Used on the Regular Routes. Note that the Bus and Car Lines Parallel Each Other for a Portion of the Route

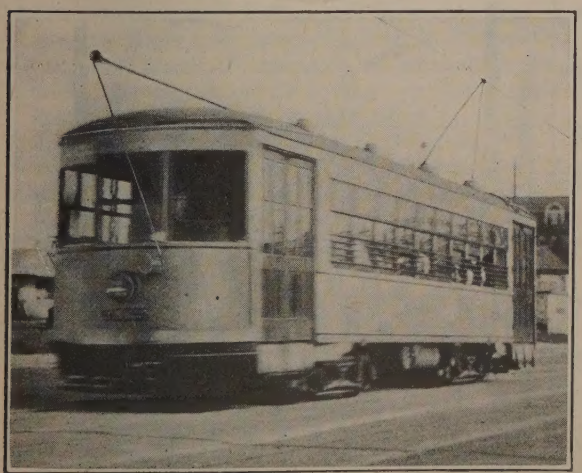


The Ocean Avenue Terminal, Asbury Park, Used by All But Two of the Bus Lines, Is Near the Center of All Beach Activities

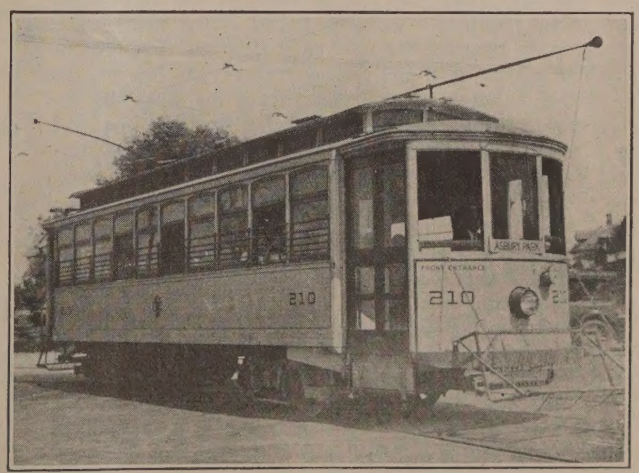
Believing that the riding public appreciates good equipment, the company purchased first-class standard coaches for its other bus lines, using 29-passenger, single-deck, Yellow Coach Manufacturing Company coaches for its city feeder lines and 67-passenger, double-deck coaches of the same make for its Ocean Avenue lines. The fleet was started with seven single-deck and six double-deck coaches, and increased later to a total of 27 coaches, of which fourteen were single deck and thirteen were double deck. These coaches were painted a uniform light gray, making them very attractive in appearance. The fares for the single-deck lines were established at 10 cents, whereas the double-deck lines were operated on a zone fare basis, three zones for each line, at a fare of 10 cents per zone. The fare of 30 cents for a ride of 10 miles on one of these double-deck, sightseeing coaches was equivalent to a fare of 21 cents for a ride the same distance on the trolley. All of the bus routes were so laid out as to parallel the trolley line for a short distance on some one street, thereby, according to the New Jersey public service law, bringing these bus lines under the jurisdiction of the Utility Commission. Although the New Jersey law provides that bus lines must obtain permits or franchises from the municipalities through which they operate, these lines, when they parallel a street railway line on the same street, come also under the jurisdiction of the commission, which prevents any competing line from being established along the same route.

During the first few months of bus operation the city line routes were changed several times in order to determine the most satisfactory one for permanent operation, and as finally constituted, they now consist of three separate lines serving a wide territory west and southwest of Asbury Park not heretofore accessible by any means of transportation. In this rapidly growing territory are several newly developed subdivisions.

In addition to these lines, the company also acquired the one existing bus line which had interfered with trolley patronage. This line was in operation between Asbury Park and Long Branch over a route between the trolley line and the shore, but very close to the trolley line. When it was acquired by the company standard bus equipment was substituted for the cheaper and smaller type of bus that had before been used, and operation was continued along the same route used before the acquisition of this line. The city of Asbury Park assigned to the company two very prominent bus terminals, one on the ocean front, for summer operation, and the other in the heart of the business district, for winter operation. That the operation of the new bus line was successful and met with the approval of the public is evidenced by the fact that the first year's operation showed a substantial profit. The cost of operation per bus-mile of the single-deck and double-deck coaches and per car-mile for the railway system are interesting by comparison and are shown in the accompanying table for the twelve-month period ended June 30, 1925.



Double-Truck Safety Cars Were Designed Particularly for the Service Operated Between Asbury Park and Long Branch



Converted Car for One-Man Service Used by the Coast Cities Railway

Coincident with the establishing of this extensive bus service in the shore section, the railway was rehabilitated. Six Birney safety cars were purchased for use on the Asbury Park loop line and on the main line south of Belmar, replacing antiquated equipment that had been in service since 1893, and seven double-truck one-man, two-man cars for the longer routes between Asbury Park and North Long Branch on the north and Asbury Park and Manasquan on the south. An attractive design was sought for these new cars. They were finished in black walnut with white ceilings and the seats were covered with brown pantasote, or imitation leather. The cars, like the buses, were painted gray. While it was realized that this color did not have a maximum of visibility, it was selected because it was distinctive and attractive in a sense that could never be claimed for the standard yellows and reds generally used for painting street cars.

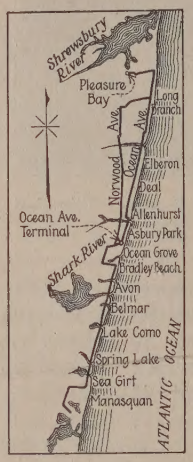
OPERATING COSTS

	Buses		
	Single Deck Cents per Bus-Mile	Double Deck Cents per Bus-Mile	Street Cars Cents per Car-Mile
Maintenance of roadway, track, etc.	....	....	02.745
Maintenance of plant and equipment	00.006	00.011	00.032
Maintenance of buses and cars	01.804	01.413	02.081
Maintenance of carhouses and garage	00.017	....	00.581
Power	02.931	03.178	06.078
Lubricants for buses	00.623	00.443	....
Tires and tubes	01.599	01.633	....
Carhouse and garage expenses	01.456	01.139	02.241
Bus and car operators	05.834	12.001	07.593
Other transportation expense	00.119	00.048	00.075
Rent of equipment	00.464	01.409	00.040
Superintendence	01.614	02.432	02.063
General office supplies and expenses	00.291	00.345	01.524
Advertising	00.103	00.404	00.018
Legal expenses	00.169	00.049	00.139
Stationery and printing	00.140	00.023	00.131
Injuries and damages	00.025	....	00.927
Insurance	01.492	00.909	00.182
Licenses and taxes	00.312	04.195	02.910
Miscellaneous expenses	00.202	00.181	00.338
Total expenses per mile before depreciation	19.201	29.813	29.698
Depreciation	3.000	3.000	01.567
Total expenses per mile including depreciation	22.201	32.813	31.265

These cars displaced two-man cars of obsolete type, and with four of the two-man cars which were rebuilt for one-man operation, the entire system was quickly converted to one-man operation except during the summer months, when the use of some of the extra open cars was required. It was found quite practicable, however, to operate the new cars straight through the summer season with one-man operators, the heavy traffic being handled without confusion or delay by arranging for the inspectors to assist the car operators in fare collection at certain centers where car loading and unloading was at a maximum. The one-man cars were operated on a regular schedule, while the open cars were used in between, to supplement the regular service during the summer months and to meet the traffic peaks that occurred at intervals throughout the summer season.

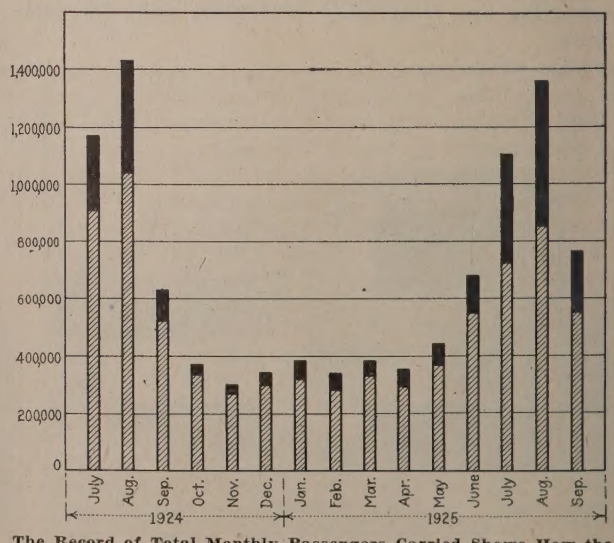
All cars coming into Asbury Park from the north and from the south were routed around the outside track of the Asbury Park loop, and a third line was operated as a belt line only, in the opposite direction on the inside track of the loop. In this manner the operating costs of the street railway were reduced materially and made to follow more closely the traffic demands, which fluctuate widely due to the character of the business. The company is now preparing to reconstruct some of its open cars for one-man operation, and thereby effect still further economies.

The line is divided into five zones from north to south, each zone averaging about 4 miles in length. The fare per zone is 7 cents. The north line and the south line each operate through three zones, No. 3 zone, the Asbury Park district, being common to each line. The use of one-man cars complicated the fare collection problem, but a system of colored zone checks was adopted which has proved satisfactory. Each zone corresponds with a check of a distinctive color, which is also plainly marked with the number of the zone. One of these checks is passed to each passenger as he enters the car, and is returned to the car operator when the passenger leaves the car, when he also pays his fare. A passenger alighting in Zone No. 3 and presenting a Zone No. 1 check pays 21 cents, or the fare for a ride through three zones. All fares are recorded on Ohmer registers. At first the recording fare boxes were also used, but under heavy travel conditions it was found that too much of the operator's time was occupied by their use, with resultant slowing up of service, and they were accordingly removed and recourse had to a rigid system of inspection to check the register readings at different points along the routes.



Through Bus Routes Furnish a Sightseeing Service Along the Ocean Front Between Long Branch and Manasquan

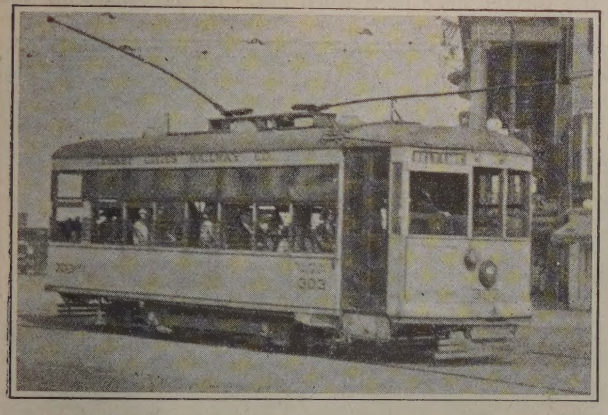
The company's carhouses, shops and offices are located at Allenhurst, less than ½ mile north of Asbury Park. Here also is located the large central power plant of the Eastern New Jersey Power Company, the company which supplies electric light and power to the Asbury Park district and which owns the railway and furnishes it with power. The carhouses have track space for 55 cars, and in connection with these and the adjoining repair shops, the company has erected, for the accommodation of its buses and cabs, a fireproof



The Record of Total Monthly Passengers Carried Shows How the Bus Assists During the Peak Months
(Shaded lines indicate car passengers. Solid lines, bus passengers.)

garage, 90x200 ft., which is rated as one of the largest and best equipped structures of its kind in the state.

The bus system has been so laid out, in co-ordination with the railway system, and both so operated as completely to service the entire section formerly served by the railway line only, in addition to sections which the trolley line could not serve and which had suffered in growth thereby. The dual purpose of preserving the integrity of the railway against competition and of meeting the demands of the traveling public for supplemental means of transportation, especially in districts remote from the trolley line, has been effected. The railway line, as the most satisfactory method of mass transportation in periods of heavy demand, remains essential to the communities which it serves, but the newly established bus lines, working in harmony with and as feeders for the railway, have become no less essential to those newly developed suburban sec-



Birney Cars Are Used for Local Service in Asbury Park

tions a mile or more back from the railway, and whose continued growth and prosperity is as dependent on adequate transportation facilities as it is on electric light, gas, water and other modern services now regarded as so necessary to the welfare of every city.

Taxicab Service Also Furnished

After the company's new bus service had been firmly established and the street railway was in process of rehabilitation it was decided to supplement the existing transportation facilities with a modern taxicab system. Accordingly, a fleet of Yellow cabs was acquired under a newly incorporated operating Yellow Cab Company and placed in operation in the Asbury Park district. Shortly afterward this company extended its operations to the neighboring cities of Lakewood and Red Bank, operating a total of fourteen cabs. Lakewood is a winter resort, while Red Bank does not experience the seasonal fluctuations peculiar either to Asbury Park or to Lakewood. It is consequently possible to transfer cabs with facility from one place to the other to meet the traffic conditions imposed, and thus to handle a maximum of business in the three communities with a minimum of equipment. In the summer from nine to ten cabs are used in Asbury Park, one in Lakewood and three in Red Bank. In winter three cabs are used in Asbury Park, nine in Lakewood and two in Red Bank.

It was to furnish a well-rounded out and complete transportation service in the Asbury Park shore district that the company decided to enter the taxicab field, and that it was enabled to do this fortuitously was due to the fact that its shop and storage facilities and its operating personnel for bus operations were suitable and available for taxicab operation, and also to the fact that there was offered a field for operation for a taxicab company that permitted equipment to be kept in operation throughout the year by the expedient of shifting it from one center to another to meet seasonal service demands which were in no sense coincident.

Established in August, 1924, this is one of the first instances, if it is not the first, of a street railway and bus company entering the field of taxicab operation. Recently other companies have followed the same plan so as to furnish a complete and fully co-ordinated transportation service.

ATLANTIC COAST TRANSPORTATION COMPANY

	1924 June 15-Dec. 31	1925 Jan. 1-Oct. 31
Passengers carried—Buses	840,910	1,572,000
Bus-miles:		
Single deck	175,222	374,655
Double deck	114,059	130,148
Total bus-miles	289,281	504,803

COAST CITIES RAILWAY

	1924 Jan. 1-Dec. 31	1925 Jan. 1-Oct. 31
Passengers carried—Street cars	5,414,664	4,580,165
Car-miles	1,178,876	984,564

Service Improved in San Antonio

New Light-Weight, Double-Truck Cars Have Been Bought and Shorter Headways Are Being Operated—Many Accessories Were Installed by the Railway in Its Own Shops

TEN new cars were recently placed in service on its Hot Wells line by the San Antonio Public Service Company. It is planned to operate these new cars on a three-minute headway for a period of 60 days as a trial. This is thought by the management to be a real innovation in a city the size of San Antonio. If the plan is successful it will be made permanent and similar service on other lines will be inaugurated as rapidly as possible.

Before being put in operation one of the cars was placed on a side track in front of the main office building. It carried a large banner welcoming the public and inviting people to inspect it at their leisure. Advantage was taken of this opportunity by many hundreds of people.

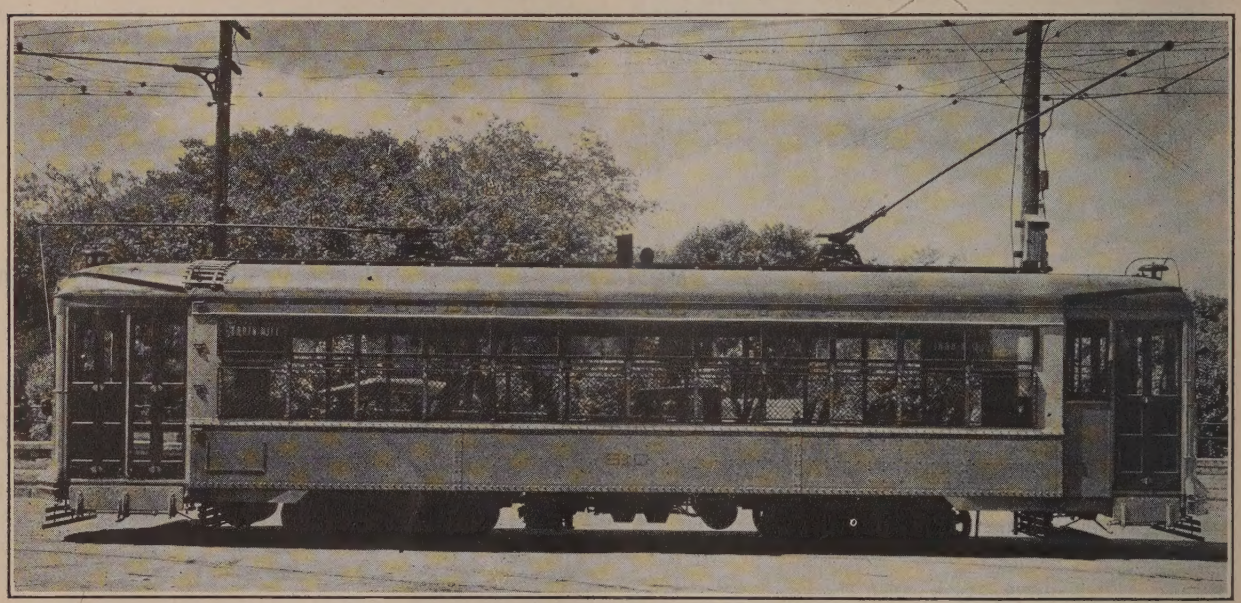
The new cars have been painted according to the deep orange color scheme used on all cars of the company, but a pin stripe of blue has been added. This creates a pleasing contrast of color. Orange was adopted by the company as standard some time ago after extensive experiments to select a shade which would have the greatest visibility under conditions existing in that district. Now not only the passenger cars are painted in this color but also all motor trucks and work cars of the company.

Detailed specifications of the new cars were published in ELECTRIC RAILWAY JOURNAL for Nov. 14, page 892. They are of the light-weight, double-truck, two-man type, built by the St. Louis Car Company. The over-all length is 43 ft. with a width of about 8 ft. The total weight is approximately 31,000 lb. Seating capacity is provided for 48 passengers on reversible wood slat seats.

Side sill angles are of 3-in x 3-in. x $\frac{3}{8}$-in. section in

one continuous piece from corner post to corner post and are gusseted to crossings of 4-in. x 4-in. x ⅜-in. angles. Cross sills are 3-in. 4-lb. channels and 4-in. 5¼-lb. channels, extending the full width of the car body. At the bolster the side sills are reinforced with 4-in. x 4-in. x ⅝-in. angles. Outside platform knees consist of 6-in. 15½-lb. channels extending from a point near the end sill to inside the bumper channel. Center platform knees consist of 3-in. 4.1-lb. channels. Bolsters are of the built-up type, the top plate being 8 in. x ⅝ in. and the lower member 8 in. x ¾ in.

Body corner and side posts are of steel tee construction with dimensions 1½ in. x 1½ in. x ⅛ in. They extend in a continuous piece from the upper to the lower sill and are reinforced with oak. Two pieces of poplar are bolted on each side of the post for fastening the roof boards. Side sheathing is of 22-in. steel riveted to the side sills, window rests, seat rest angles and steel posts. The belt rail is a continuous flat steel bar 2½ in. x ⅜ in.



New San Antonio Car on Public Exhibition Before Being Placed in Operation

Seat rest angles are 1¼-in. x 1¼-in. x ⅛-in. steel. Body window rests consist of sheet steel riveted to the belt rail and tee posts. All joints are covered with No. 26 copper soldered to make them watertight. Letterboards are of No. 16 sheet steel joined together with splice plates.

Vestibule posts are of oak. Dashers are of No. 13 sheet steel in one continuous curved piece. At each of the diagonal right-hand corners the platform is equipped with a single two leaf folding door. On the opposite side of the car at each end are double two leaf doors. All doors are manually operated and fold inward. Outside folding steps are operated in conjunction with the doors.

The roof is arched with a raised trolley platform. This railway uses a standard trolley pole and a platform is necessary in order to bring the trolley base to the proper distance from the wire, which averages about 17 ft. above the ground. Vestibule hoods are extensions of the roof and have the same type of carlines, etc. Roof boards are ⅛-in. poplar, tongued and grooved with "V" joints. On top of the boards is a covering of standard No. 6 canvas, put on while the roofing was wet.

Trucks are St. Louis Car Company type EDJ 64. Journal boxes have plain bearings and the wheels are of cast iron. Control is General Electric type K35KK. Four General Electric 258-I inside hung motors are used. Brakes are Westinghouse straight air.

Faraday buzzers are used. This system, however, has been extended to include conductor's signal to the motorman by a single-tap push-button-operated bell.

Many of the accessories have been installed by the San Antonio Public Service Company at its own shops. This was done because the railway shops are well equipped to do work of this kind and it was desired to keep the purchase price down to a minimum.

For a similar reason cast-iron wheels are used instead of steel wheels, which are standard equipment on all other cars of this company. It is the intention to replace the cast-iron wheels with steel wheels as soon as the former have been worn out. In the meantime the original cost was reduced and the company will be able to spread the capital expenditure over a longer period. The cars are wired for power-saving devices, although these have not been installed at the present time. This step also was taken for reasons of initial economy.

New American Legion Post Formed in Chicago

A SPECIAL post of the American Legion has been organized for employees of the Chicago Surface Lines. The Surface Lines presented the post with a stand of colors, at which John E. Wilkie made the presentation speech and former Governor Edwin P. Morrow of Kentucky made the address of acceptance. A notable ceremony was held, a feature of which was music by the Chicago Elevated Post Bugle and Drum Corps, which received honorable mention at the Omaha Legion convention. The new post participated in its first city-wide celebration when it appeared at the Soldiers' Field stadium in the Armistice Day ceremonies on Nov. 11.

Executive Committee in Session in the Main Committee Room at the Association Headquarters

What the A.E.R.A. Is Accomplishing for the Industry

A Valuable Service Bureau Has Been Developed That Engages in a Wide Range of Activities—Managing Director Storrs Has Brought New Leadership —Madison Avenue Quarters Has Given More Space for Expansion of Service

By John A. Dewhurst
Associate Editor ELECTRIC RAILWAY JOURNAL

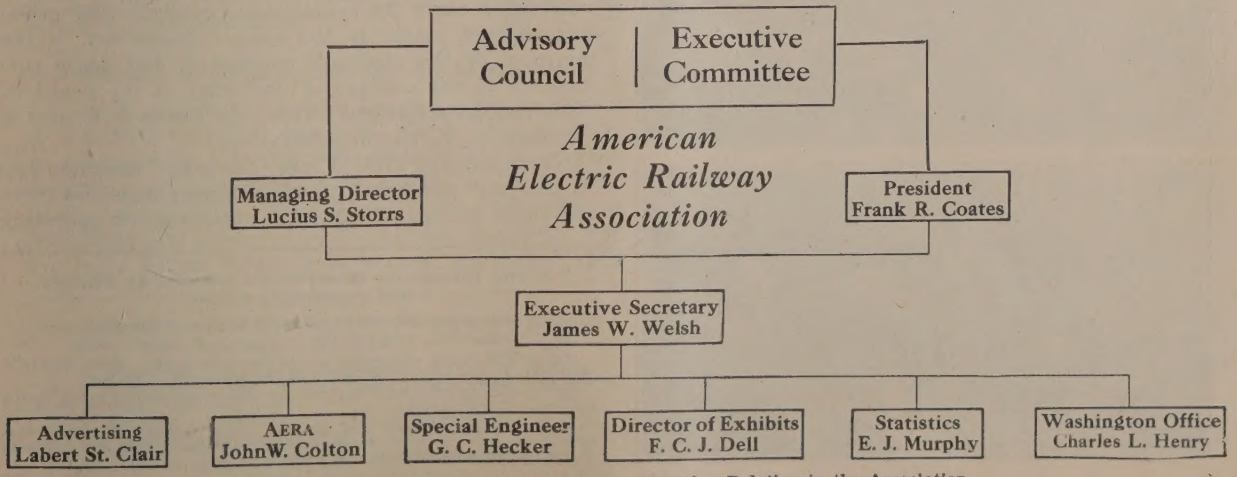
SERVICE, the watchword of the electric railway industry, is likewise the foundation of the American Electric Railway Association. Activities of this body center around a headquarters staff composed of men having wide experience who have developed much valuable information for the benefit of its members.

Through the association a unity of action is possible that is of vital importance to the industry. No company can afford not to be a member of this organization and to participate actively in its work.

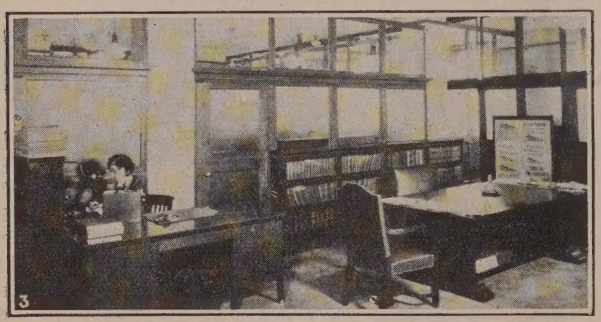
The association itself is a group of five affiliated associations, representing the important branches of the railway service. The American Association consists of general executives and company and individual members interested in the welfare of the industry as a whole.

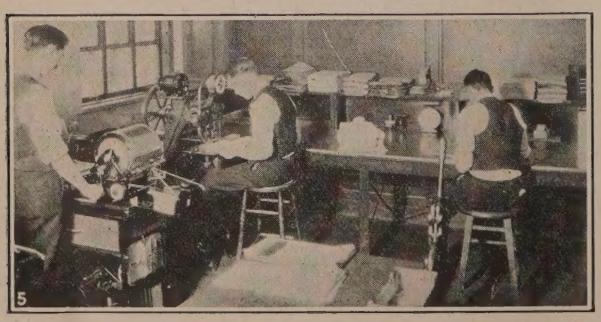
The Engineering, Accountants', Claims and Transportation & Traffic Associations are independent groups, each of which annually elects a president and officers, appoints committees and functions generally for the respective branches of the service that it represents.

What any individual or company member may get out of the association activities depends largely on the contribution to its work and the participation in its progress. Whether the individual participates in the activities or not, the staff is always ready to serve the members from the wealth of its information. That the service of the headquarters staff is appreciated and


Advisory Council
Executive Committee
American Electric Railway Association
Managing Director Lucius S. Storrs
President Frank R. Coates
Executive Secretary James W. Welsh
Advertising Labert St. Clair
AERA JohnW. Colton
Special Engineer G. C. Hecker
Director of Exhibits F. C. J. Dell
Statistics E. J. Murphy
Washington Office Charles L. Henry

Organization of Headquarters Staff and Operating Relation to the Association





used is proved by the increasing requests made for service, which last year totaled nearly 14,000, compared with 13,300 the year before and 11,700 the year before that. Last year three-quarters of all company members made direct use of the association service by sending in one or more requests for information. Several roads made more than 100 requests each, and one company in excess of 200 requests during the year. Hardly an important commission hearing passes or a wage controversy or adjustment of franchise terms is undertaken but that data compiled by the association staff are used as the accepted statistical background.

Through the formation of the Advisory Council last winter a group of influential men long identified with the industry has been brought more actively into the service of the association. On the Advisory Council are 24 men prominent not only in the electric railway field but in national industrial life as well. Foremost among them are Chairman B. C. Cobb, Henry L. Doherty, Samuel Insull, Sidney Z. Mitchell, Randal Morgan, H. Hobart Porter, Guy E. Tripp and Owen D. Young.

COMPARISON OF COMPANY MEMBERSHIP AS OF OCT. 31, 1924, AND SEPT. 15, 1925

Companies	Oct. 31, 1924	Sept. 15, 1925	Gain
Railways	346	341	*5
Associate	24	29	5
Manufacturers	334	371	37
Total	704	741	37

* Loss

COMPARISON OF INDIVIDUAL MEMBERSHIP AS OF OCT. 31, 1924, AND SEPT. 15, 1925

Association	Oct. 31, 1924	Sept. 15, 1925	Gain
Accountants'	51	50	*1
American	134	154	20
Claims	34	33	*1
Engineering	498	499	1
Transportation & Traffic	107	115	8
Total	824	851	27

* Loss.

The first official act following the creation of the Advisory Council was the appointment of Lucius S. Storrs as managing director of the association, thus making available a permanent executive located at headquarters to carry out a continuing policy. The president, elected yearly at the annual convention, is the chairman of the executive committee, and hence corresponds to the position of chairman of the board of industrial organizations. This year Frank R. Coates is president of the parent association.

Membership is divided into "company" members and "individual" members. Of the company members there are three groups—"railway," consisting of operating

A Trip Through the Headquarters Indicates an Efficient and Comfortable Layout

No. 1. Managing Director Lucius S. Storrs at his desk.

No. 2. Committee room in the managing director's suite.

No. 3. The main entrance to the headquarters. Miss Florence Sheridan at the telephone board is the pleasant "greeter."

No. 4. Mr. Storrs' suite on the twelfth floor immediately below the main headquarters.

No. 5. Mimeographing and mailing room, where not only correspondence but the voluminous statistical reports and the products of the advertising division are mailed.

electric railway properties; "associate," including any holding company, engineering or management concern or banking institution having interests in common with the industry, and "manufacturer" members, including any company manufacturing supplies or equipment used by the railway industry. Individuals connected with member companies and others engaged in electric railway or allied activities may become individual members. This class of membership carries with it affiliation with one of the five associations. Individual members receive *Aera* and notices of all meetings. They have the right to attend, but may not vote or hold office unless they also serve as delegates of company members. Many delegates are also individual members.

Dues are $5 yearly for individual members. For operating company members the dues are based on gross revenue, varying from $50 for the smaller companies up to $2,500 for the largest whose annual gross revenue exceeds $10,000,000. Associate members are in two classes, with dues of $50 and $200 respectively. Manufacturer members pay on the basis of gross sales to railways.

There are now 341 railway company members, 29 associate members, 371 manufacturer members, and 900 individual members. The membership covers 85 per cent of the mileage eligible and there are comparatively few electric railways that are not now included.

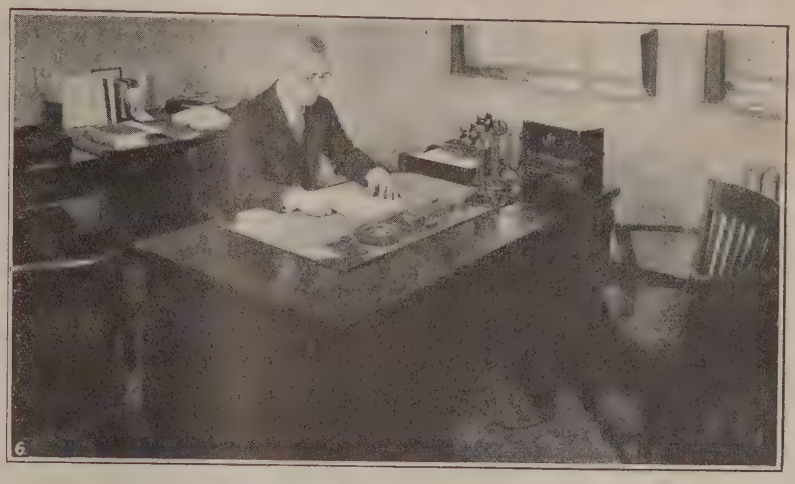
Since Feb. 22 the headquarters staff has occupied the fourteenth floor of the Johns-Manville Building at 292 Madison Avenue, New York City. Here the association has 6,000 sq.ft. available, an increase over the old quarters of nearly 50 per cent.

Upon the appointment of the managing director the association was fortunate in being able to secure a comfortable suite on the floor immediately below.

ANALYSIS OF REQUESTS FOR INFORMATION MADE OF THE HEADQUARTERS STAFF

	1924–25	1923–24
Requests answered by compilations and bulletins listed in the Monthly Service Letter	9,827	9,283
Requests requiring special research investigation	753	730
Requests for committee reports	267	215
Requests for other association publications	371	303
Requests for proceedings	108	94
Requests for material distributed by advertising section	787	972
Requests for *Aera*	236	320
Requests for engineering manuals	102	284
Total	12,451	12,201

Directly, the staff activities are under the leadership of Executive Secretary James W. Welsh. Mr. Welsh is an engineer by training and operator by experience. Following his appointment as special engineer some seven years ago, he was selected from a long list of candidates and advanced to his present position. For five years he has skillfully supervised the varied work



Association Offices Are Well Equipped with Modern Appliances to Carry On the Expanded Activities

No. 6. In the office of Executive Secretary James W. Welsh.

No. 7. Stenographic and clerical departments under the supervision of Mrs. Alice Siebrecht.

No. 8. Automatic typewriters in clerical department.

No. 9. The library in charge of Miss Julia Kelly.

No. 10. E. J. Murphy and his staff of statisticians.

of the six general departments comprising the headquarters staff, whose 48 members operate in groups, as explained in the following chapters.

Engineering Division

G. C. Hecker

WHILE G. C. Hecker holds the title of special engineer, his is one of those titles that does not express the wide activities of the position. Mr. Hecker's time is occupied by many things. Probably most important of his duties, however, is in connection with the committee work of the association. Mr. Hecker does not profess to be able to attend all of the committee meetings, but does attempt to attend enough to assist in their organization and guide their work. He also compiles and edits the annual reports and so prepares them that there will be uniformity of this work at the end of each fiscal year. That this is a really very sizable task is better appreciated when it is realized that there were 68 standing committees, with 913 members attending nearly a hundred meetings during last year.

COMMITTEES OF THE AMERICAN ELECTRIC RAILWAY ASSOCIATION AND ITS AFFILIATED ASSOCIATIONS DURING THE YEAR 1924–1925

Association	Number of Committees	Number of Committeemen	Number of Meetings
American	30	533	52
Accountants'	7	35	5
Claims	5	35	2
Engineering	20	238	34
Transportation & Traffic	6	72	6
Total	68	913	99

In addition to these direct assignments, Mr. Hecker assists Mr. Welsh in the performance of the executive management of headquarters. It is also the duty of the special engineer to assume charge of publication of the Engineering Manual, and many other special publications issued by the association during the year.

A. W. Baker assists Mr. Hecker, makes engineering studies and conducts the Question Box in *Aera*.

Advertising Division

Labert St. Clair

ADVERTISING and publicity work received its first active attention when Labert St. Clair joined the staff as director of this branch of the service. Mr. St. Clair has divided his time between establishing active contacts with financial editors of newspapers all over the country and other outside news agencies and the preparation and distribution of news stories to such papers.

Entirely aside from originating news stories and establishing contact is the special service that this department renders in furnishing advice to company members. Campaigns of various sorts are worked up for railway companies or advice is given in connection with plans that are submitted.

This department is also a point of contact between the industry as a whole and the large number of state public utility committees formed for the dissemination of public utility information.

As an illustration of the methods used, there is cited the "Shop Early" campaign of a year ago. This department distributed 145,000 stickers and 40,000 posters bearing on this subject. At other times during the year this department issued a series of twelve attractive posters on "What Delays You?" and also issued a series of fifteen advertisements for newspaper use bearing on important railway matters which member companies could obtain at a very nominal cost.

Active support was given by the association through the advertising division to Secretary Hoover's Conference on Street and Highway Safety. So successful was this publicity work that it was recognized by Mr. Hoover in an excellent letter received after the conference had been completed.

The department also syndicates addresses and papers that have been read by railway executives. It has also prepared material for a number of talks to be given in different parts of the country and has written and published several books of value to the industry as a whole. The bulletin *Truth* is issued monthly, an edition of 15,000 copies being distributed. This bulletin is designed to be used by companies as a clip sheet in the circulation of news of the industry to the newspapers throughout the United States.

Stickers have been sent to manufacturing companies to be pasted on shipments and on invoices, stating that the welfare of the men handling the shipment depended on the prosperity of the electric railways. Ninety thousand of these stickers were distributed during the year.

Division of Exhibits

F. C. J. Dell

WITHOUT question the work headed up by F. C. J. Dell is the most spectacular of any of the association's activities. For about six months during the year Mr. Dell concentrates largely on membership in the association. But with a steadily rising crescendo, his plans are being laid for the annual burst of splendor that occurs in the exhibit at the convention during the first week in October of each year.

For months beforehand Mr. Dell is busy with the myriad of details pertaining to the allocation of space, the collection of rentals and similar problems, the right solution of each being necessary to create this wonderful show. Several weeks prior to convention time, Mr. Dell moves to Atlantic City, where he can be on the job day and night. Here he remains until several weeks after the convention ceases, in order to clear away the post-convention details.

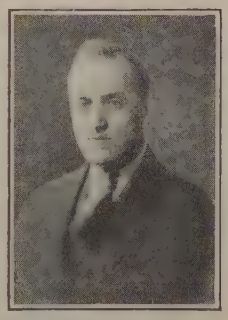
This last October there was gathered together some $1,750,000 worth of electric railway and bus equipment, which constituted the largest industrial exhibit of its kind ever held. While the primary purpose of the exhibit is educational and actual selling during the convention is prohibited, many delegates crystallize their ideas sufficiently to lead directly to a purchase. It has been estimated that sales growing out of the exhibits aggregate many times their intrinsic value.

Far more important than the sales actually growing

out of the convention, however, are the friendships formed and the contacts established each year. The expenditure of many thousands of dollars might otherwise be necessary to accomplish the same results. Likewise, the delegates see the equipment and apparatus, much of it either working or disassembled to show its construction. Four or five days spent each year under the pleasant surroundings existing at the convention are at once an education of paramount importance and a welcome relief from the humdrum of operating duties that freshens the mind and adds incentive to do better the job on return.

While Patrick Henry's chief duty is assistant chief clerk he has rendered valuable assistance to Mr. Dell in connection with convention exhibits.

Statistical Division



E. J. Murphy

OF AN entirely different nature is the work of E. J. Murphy, chief statistician, and his corps of ten assistants. This department has established a reporting system covering nearly all of the company members and publishes monthly compilations of statistics founded on the reports received from these companies. In another column appears a list of the more important studies issued during the last year. Many of these statistical compilations are revised and brought up to date periodically so as to furnish the latest information that is available.

On the first of each month a service letter is mailed out, listing the new data ready for distribution as of that day. Copies will be sent to member companies on request. More recently, the data compiled have been analyzed and digested, so that a résumé is given in the opening paragraphs of each compilation that lends itself to such analysis.

A FEW OF THE IMPORTANT COMPILATIONS PREPARED BY THE STATISTICAL DIVISION

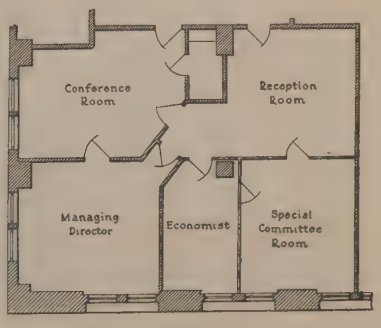
	Number of Requests
Wage Bulletin and Supplements	1,079
Motor Bus Operations in U. S. (Five Parts)	956
Cost of Living	916
Fare Bulletin and Supplements	883
Traffic Ratios—1924 City and Interurban Lines (three editions)	421
Trend of Material Prices (two editions)	298
Trend of Electric Railway Operations	297
Electric Railways Operating Motor Bus Lines	228
Bus Operating Reports	207
Wages of Bus Men	204
Bus Operation of Electric Railways in 1924	192
State Regulation of Motor Bus Common Carriers	185
Transportation Service by Motor Bus Lines	171
Series of Charts Illustrating Developments in Electric Railway Industry	166
Trend of Electric Railway Fares	166
Schedule Analysis	164
Methods in Increasing Electric Railway Traffic	159
Accident Statistics of Electric Railways—1923	153
Suggested Remedies for Traffic Congestion	153
Wages of Employees Other Than Trainmen	153
Motor Bus Decisions	149
Electric Railway Operations in 1924	149
Electric Railway Valuation	146
Special Factors Affecting the Working Conditions of Electric Railway Trainmen	145
Motor Bus Operation in California	142
Trend of Trainmen's Wages	138
Customer and Employee Ownership of Electric Railway Securities	136
Working Conditions of Electric Railway Trainmen	135
Rate of Return Allowed Electric Railways	131
Anti-Jitney Regulation	130
Accident Statistics of Electric Railways, 1924	127

In the nature of special research work done by the statistical division, individual studies may be requested by member companies. This service is particularly desirable in the preparation of rate cases and hearings on franchise matters. Among the more recent developments of this service has been the compilation and studies relative to bus operations, which has been of ever-increasing importance to electric railways.

H. L. McKee assists Mr. Murphy in the direction and supervision of the work of this important department.

Headquarters Arrangement

At left is the layout of the offices of the headquarters staff on the fourteenth floor of the Johns-Manville Building at 292 Madison Avenue, New York City. Below is the managing director's suite on the twelfth floor immediately below the general offices. This is not a typographical error, as the designer of the building did not have confidence in Number "13."



THE ASSOCIATION MAGAZINE

John W. Colton

IN THE words of the executive secretary, James W. Welsh, "*Aera* has made a really noteworthy achievement for the year. The excellence of the magazine has been repeatedly commented upon by the members, both verbally and by letter. This year, for the first time, *Aera* stands on its own feet financially; that is, there will be a surplus in the actual money received over the cost of production, including its share of association expense." John W. Colton, editor of the association's monthly magazine, is largely responsible for this excellent result.

Association activities, articles, speeches, committee reports, and other material designed to promote the welfare of the electric railway industry appear in the pages of this magazine.

WASHINGTON OFFICE

UNDER the general direction of Charles L. Henry, general counsel of the A.E.R.A., the Washington office of the association is maintained. This office is directly in charge of P. W. McGovern and is devoted largely to the interstate operations of the electric railways, of which there are many. This office advises as to Interstate Commerce Commission rulings, hearings and other such matters of interest to interstate carriers and advises as to legislation considered by Congress.

LIBRARY, STENOGRAPHIC AND CLERICAL

LOCATED in the center of the fourteenth floor is the library, which is in charge of Miss Julia Kelly. The department performs valuable service for the other divisions in making researches and briefs of subjects under investigation. The library has available complete copies of the proceedings of all technical associations and societies, public service commission reports of practically all states having commissions, files of technical publications, as well as a complete library of books relating to electric railway transportation. From this information the library staff is well equipped to perform service for the staff as well as members.

In the service of all is the centralized stenographic and clerical department, under the direction of Mrs. Alice Siebrecht. Besides the dictation and typewriting of correspondence and reports, this department handles the voluminous work of preparing copies of the statistical compilations and form letters sent out to the industry from time to time. The department is well equipped with modern office appliances, including two Hooven automatic typewriters, three mimeographs, one power-driven wire stitcher used for binding large compilations, and an addressograph.

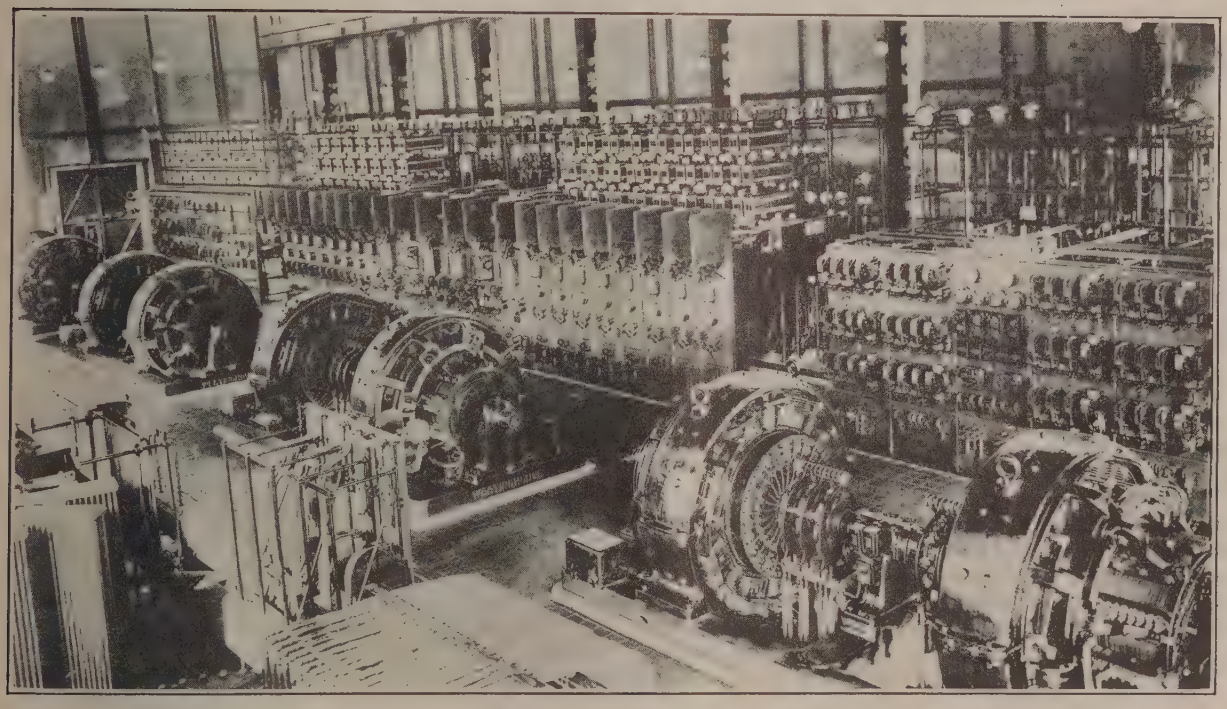
SAFE-hi-WAYS
A MEDIUM DEVOTED TO ACCIDENT PREVENTION
PRESIDENT COOLIDGE SAYS:
"The yearly toll of traffic accidents has reached an appalling total. If the death and disaster that now fall on
were concentrated
lamity, we would
tremendous catast
you are combatin
concern."
From an address by President Coolidge to delegates to the National Conference on Street and Highway Safety.
WHAT DELAYS YOU—
Horse Drawn Vehicles
A slow-moving vehicle gets in front of your street car — the motorman clangs and clangs — maybe the driver hears—
you creep along.
EPITAPH: He almost got across in time
SAFE-hi-WAYS
Every 162d Person in the U. S. was Hurt in 1924
SAFETY — Devoted to the Accident Prevention Cause — SAFETY
THE SAFETY JOB—WHOSE?
(Recommendations National Conference, Washington, D.C.)
Uncle Sam—
Should advise, assist and encourage all safety workers
The States—
Should adopt and enforce regulatory legislation
CITIES
Should enforce all state and municipal laws
We Don't Run Away!
An understanding friend is Fred,
Who, when he missed my car, just said:
"I know Tom wouldn't run from me,
Or anyone whom he could see."
"My Buddies and I would be flirting with our jobs if we ran away from passengers purposely"
What Delays You—
Trucks on Track
A truck driver hugs the car tracks—the motorman gets broken arches clanging his gong —you wait.
THE REMEDY—
Keep trucks off street car tracks—
Philadelphia does it!
READY RELIABLE
FACTS ABOUT CAR RIDES
Electric cars mainstays—buses feeders
ays in the United S
illion riders last y
ful in supplemen
re needed to ca
Grace Moves Forward
I nominate for highest place,
A clever girl whose name is Grace,
She never lingers 'round the door,
But moves ahead—makes room for more.
"In cars, as in life, there usually is room up ahead"
Park Here
We've Never Lost a Spare for Any Customer
READY RELIABLE

Types of Posters Designed by the Advertising Division and Reproduced for Member Companies at a Nominal Cost to Them

Power Distribution System for the Japanese Railways

Converters Arranged to Operate in Parallel at 750 Volts or in Series at 1,500 Volts—Total Power Capacity Will Be 226,300 Kw.—Transmission Line Voltage Will Be 154,000—Present 1,200-Volt System for Multiple-Unit Suburban Service at Tokyo Will Be Continued

By S. Q. Hayes
General Engineer Westinghouse Electric & Manufacturing Company



New Substation of the Japanese State Railways, Showing Seven of the Eight 1,000-Kw. Rotary Converters

DURING the last three years considerable work has been done in connection with the electrification of the main Tokaido line of the Imperial Government Railways of Japan, connecting the stations of Tokyo and Kobe. Portions of this work now being actively pushed cover the line from Tokyo through Kawasaki, Yokohama, Ofuna, Ninomiya, Ugahara to Numadzu, this being part of the main Tokaido line. Branch lines from Tokyo to Abiko, Urawa and Tsudanuma and cross lines from Yokohama through Sakai to Hachijoji will also be electrified. An article on the subject was published in ELECTRIC RAILWAY JOURNAL Sept. 12.

While the sections now to be electrified are comparatively short, they are the ones on which the traffic is densest. It is expected that at a later date the electrification of the main Tokaido line will be extended through Nagoya and Kyoto to Osaka and Kobe. Other sections to be electrified will probably comprise the northbound lines from Tokyo leading up to Sendai, as well as certain sections running through the mountains crosswise of the island.

Multiple-unit trains have been in operation for several years on the electrified interurban lines between Tokyo and Yokohama and on the belt line in Tokyo, these being operated from four substations in the city of Tokyo. These substations, called Yeirakucho, Oi, Okubo and Tabata, obtain energy from the railway's steam-driven generating plant at Akabane and from the 11,000-volt distribution system of the Tokyo Electric Light Company.

While the original installation at Yeirakucho was intended primarily for feeding a 600-volt section running through the main railway station at Tokyo as far as the Shinagawa station, the machines were made suitable for operation, two in series, at 1,200 volts. That is the voltage originally used for the balance of the railway electrification from Shinagawa to the outskirts of Yokohama and for the loop line running to the Uneo station in the northwestern part of Tokyo. In the three other substations in the city of Tokyo, namely, those at Oi, Okubo and Tabata, the converters are arranged to operate either in parallel at 600 volts or in series at 1,200 volts.

The estimated power requirements for electrification of the various railroad sections in central Japan are as follows:

Lines	Miles	Kilowatt-Hours per Mile	Power Capacity Kilowatts
Tokaido lines	374	200	74,800
Chuo lines	301	150	45,150
Hokuriku lines	228	150	34,200
Kansai lines	119	150	13,350
Sangu lines	45	150	6,750
Tokyo and vicinity	197	150	29,550
Osaka, Kyoto and vicinity	150	150	32,500
Total	1,414	...	236,300

Electric locomotives for the main electrification from Tokyo through Yokohama toward Kobe will run temporarily only as far as Numadzu and will be supplied from the four present stations, chiefly from Yeirakucho and Oi, and from new stations at Kawasaki, Yokohama, Ofuna, Ninomiya, Ugahara and Numadzu. Temporarily the two substations at Kawasaki and Yokohama will be fed at 11,000 volts from Oi substation.

According to the plans, new substations at Kawasaki and at Yokohama will each contain three 2,100-kva. Westinghouse OISCR three-phase transformers, each transformer being provided with double secondary to supply the current for eight 1,000-kw., 750-volt Westinghouse converters, used two in series for 1,500-volt service.

The interior of one of these substations is shown in an accompanying illustration. The 8,000-kw. nominal capacity of this station is obtained from the series combination of the converters in pairs. Each of the four pairs in the stations is mounted on a common bedplate and has three bearings.

For each pair of converters there is a 2,100-kva. transformer whose primary is connected to the 11,000-volt distribution line. Each transformer is provided with two independent six-phase secondaries, each of which furnishes a.c. current to one of the 1,000-kw. units. On the switchboards at the right of the illustration are mounted the relays and contactors needed for the a.c. end of two sets of machines. A similar board is located at the opposite end of the room.

The d.c. end of the four pairs of converters and also the sixteen 1,500-volt railway feeders is between the two a.c. boards in the center of the room. Behind the d.c. board is an assembly of grid resistors utilized in connection with the automatic control of the synchronous converters and the railway circuits.

A starting switchboard is located in front of each pair of converters, facing the main switchboards, but on the opposite side of the machines from them. The machines are started from suitable low-voltage taps on the secondary winding of the step-down transformers.

Brush-lifting mechanisms are installed at each end of each bedplate. On the middle bearing pedestal are located two thermal relays used in connection with the bearing thermostat and a flash relay connected between the frame of the machine and ground. The machines are also equipped with flash barriers.

While the 11,000-volt circuit for the transformers of the synchronous converters at Kawasaki and Yokohama will temporarily come from Akabane and the lines of the Tokyo Electric Light Company, it is the intention to install at Kawasaki transformers stepping down from 66,000 volts to 11,000 volts, feeding the latter bus at that point and supplying that voltage to Yokohama and through Oi to various parts of the system. Other substations along the Tokaido line, namely, Ofuna, Ninomiya and Numadzu, will be fed at 66,000 volts, supplied temporarily from the lines of the Tokyo Electric Light Company.

Beyond Numadzu, toward Gotemba, the heavy mountain grades, due to Mount Fuji, are encountered. Mountain grades are also met with on the line through Hachijoji, Jose, Hatsukari and Kusakabe, so that in substations at these points, as well as at Gotemba and possibly some other points, motor-generator sets will probably be provided to allow for regenerative braking on the locomotives. These stations will be fed at 66,000 volts from Kichijoji or from the lines of the Tokyo Electric Light Company or the Daido Power Company. Other substations at Sakai, Abiko, Tsudanuma and Urawa are to take care of service in various directions from Tokyo.

Prior to the earthquake, it had been the intention to install by 1925 at the Shinagawa hydro-electric operating station five vertical shaft waterwheels of approximately 35,000 hp. capacity, operating under a head of 346 ft., with an alternative of installing four 50,000-hp. wheels. The future plans contemplate the ultimate installation of a total of ten 35,000 or seven 50,000-hp. waterwheels. Each of the waterwheels was to be directly connected to a 25,000-kva. or 35,000-kva., 11,000-volt, 50-cycle generator to operate normally at a power factor of practically 100 per cent. Each main generator in this plant was to be provided with a bank of three single-phase water-cooled transformers stepping up from 11,000 volts delta to 154,000 volts star, the neutral point of this star being grounded through a resistor. Execution of these plans has been delayed on account of the earthquake, but it is expected that they will be carried out in the near future.

Vertical spacing of the transmission wires will be 14 ft., the bottom wire about 50 ft. from the ground at the tower, 28 ft. from the ground at the lowest point of span, with a tower spacing of 800 ft. The charging current of one line about 140 miles long will be in the neighborhood of 14,375 kva. With a generating station voltage of 154,000 volts and a receiving station voltage of 140,000, at least 100,000 kw. can be economically transmitted over the two three-phase lines.

In order to prevent undue rise of voltage at the distributing station at Kichijoji at times of light load and to allow for the maintenance of 66,000 volts on the outgoing lines, it is the intention to install two 15,000-kva., 11,000-volt, 50-cycle, three-phase synchronous condensers, one of which will be connected to the tertiary winding of a transformer bank fed from each line. The 11,000-volt windings of the transformer banks at Kichijoji, in addition to furnishing current to the synchronous phase modifiers, will also be used for supplying feeders to Sakai, Okubo and possibly to other 11,000-volt substations.

The 1,200-volt d.c. system for motor car service between Tokyo and Yokohama will continue to be used for the short section of the main line electrification from Tokyo to Shinagawa as well as for the branch line from Shinagawa to Ueno, and from Tokyo or Yokohama to Hachijoji multiple-unit motor car service is to be continued in use. For the operation of the 1,200-volt motor car service from Shinagawa to Ueno and from Tokyo to Hachijoji a substation at Sakai, near Kichijoji, will be used. The 1,500-volt d.c. system will be utilized for the electrification of the Tokaido lines from Shinagawa toward Kobe.

The Readers' Forum

More About Single-Form Train Orders

SAN FRANCISCO, CAL., Nov. 20, 1925.

To the Editor:

From Mr. Hanshy's letter I take it that the Illinois Traction System issues orders in accordance with Rule 202. If this is the case, then the road is not really operated by single-form orders, but by double-form orders. It is not necessary to issue the train order to all trains at the same time to comply with the double-form order system. Rule 202 says nothing about train orders being given to all trains concerned at the same time. This would indeed be impossible for many roads that operate with double-form orders.

The single-form order system I referred to in my previous letter is the old-fashioned, lazy, indifferent, rule-of-thumb method that was in use 40 years ago by single-track railroads, before Rule 202 was thought of. Unfortunately some interurban railroads as well as steam roads have retained this system, more or less, ignoring Rule 202. Those are the real single-form order systems.

Rule 202 was written into the standard code to prevent the use of single-form train orders. Any road that complies with it certainly cannot be correctly considered as running its trains by single-form orders. A definition of the single-form order might be given as follows: A single-form order is an order not written in the same words, or not containing all of the words, to the several trains addressed. The report of a recent collision on a Western railroad shows what the Interstate Commerce Commission thinks of roads that operate trains with single-form orders.

I agree with Mr. Hanshy that the standard code contains many rules that would be difficult to apply to all interurban electric lines. However, there is no excuse for any of them to omit Rule 202. If I were in charge of an interurban road and discovered it was impossible to operate my trains by double-form orders I would order all trains into sidetracks and start back for the farm.

GEORGE W. BOOTH,
Electric Locomotive Engineer.

Energy Consumption on Rails and Roads

OMAHA & COUNCIL BLUFFS STREET RAILWAY
OMAHA, NEB., Nov. 2, 1925.

To the Editor:

Matters which pertain to the operation of public transportation vehicles are particularly interesting at this time. Not all the economies of the various types are understood clearly by the general public, nor by operators, and sooner or later the public may want to know, and those engaged in the business should know.

As a part of the economies of rail transportation, I have never seen information covering any experiments intended to show the relation between the power consumption of vehicles operating on rails compared to like vehicles operating on roads.

It would be interesting to know how much gasoline per mile an automobile would consume equipped with flanged wheels and operating over a good track compared to the consumption per mile when equipped with pneumatic tires and operating on a paved street. Of course, grades and stops would be the same in each case.

We know that the tractive resistance per ton with steel wheels on steel is much less than with rubber on concrete. Experiments have been made by public road officials which show that with certain trucks operating on roads the gasoline consumption is about twice as great when trucks operate over average earth roads as when they operate over smooth concrete pavement.

Some time ago I read in one of our periodicals a description of a novel procedure somewhere out West. A certain road 32½ miles long equipped a Ford chassis with flanged wheels, mounted a twelve-passenger body, and pulled a small freight trailer as an experiment. After operating this unit, hauling passengers and 3 tons of freight, it was found the gasoline consumption was 3 gal. in the 65-mile run. If such is the case, we know that no such mileage would be obtained if the Ford were carrying this load on a road. If any information is available concerning the relative amounts of power required under these varying conditions, I should be glad to hear of it.

R. H. FINDLEY,
Superintendent Track and Roadway.

Insurance for Employees

EMPLOYEES of the Scranton, Montrose & Binghamton Railway, Scranton, Pa., have been offered group health and accident insurance by their employer, in addition to group life insurance totaling approximately $120,000 that is already in force.

In 1923 the railway purchased from the Metropolitan Life Insurance Company a group life insurance policy for its employees. The insurance was issued on a co-operative basis, employer and employees jointly paying the premiums. No medical examinations were required and each contributing employee immediately receives $1,000 life insurance protection. Should any employee become totally or permanently incapacitated before age sixty, he will be paid the full amount of his insurance in equal monthly installments.

The new contract, also underwritten by the Metropolitan Life on a co-operative plan, provides each contributing employee with $10 weekly sick benefits for a maximum of 26 consecutive weeks in the event of illness or non-occupational accident.

Employees insured under these group contracts may avail themselves of the free nursing service maintained by the insurance company, if living in a locality supplied by a nursing center. They will receive also without cost interesting pamphlets on health and sanitation.

Fairmont Company Entertains Personnel

OFFICIALS, superintendents, supervisors and foremen of the Monongahela West Penn Public Service company to the number of 141 were guests of the company at a dinner at the Hotel Fairmont, Fairmont, W. Va. This was the first event of its kind on the system. George M. Alexander, president of the company, welcomed his fellow workers and outlined the policy of the company. He said that good service was the paramount object of the organization. "This is no 'public be damned' company," he said. "We take a firm stand that our patrons are always right. We firmly insist that our employees be treated fairly and courteously." The visitors were entertained with a splendid vaudeville bill and the evening entertainment was brought to a close with a moving picture comedy.

Association News & Discussions

Buses in Mass Transportation*

By W. F. Evans
President Detroit Motor Bus Company

WE HAVE all read in the journals devoted to the electric railway industry and in the public press a great deal concerning the subject of trackless transportation. Before reaching the subject of comparative costs of the two systems we must first refer to some of the features which have been so widely discussed in order intelligently to judge any figures or comparisons that may be submitted.

The particular thing to which I refer is the statement broadcasted by the electric railway industry that "buses would not handle mass transportation." If this be the fact, then your interest in this subject is of little value, if not an entire waste of time. At the time these statements were first made there was very little history of operation in this country with which successfully to refute them. In the past three or four years, however, certain operations have been carried to a point where they indicate, if they do not prove conclusively, that to handle mass transportation with a trackless type of vehicle is entirely feasible, and, in fact, is rapidly becoming a necessity in most of our large cities, in order to allow all vehicular traffic a freer use of the street surface and thereby afford relief to the congestion which is brought about by the use of the automobile.

Assuming that our city traffic continues to increase, it is most necessary that street surface be used in a more efficient manner and that a type of public service vehicle be used that will occupy less street space per seated passenger; that will flex with present-day vehicular traffic and allow general traffic to flow faster.

Ambassadors of the electric railway association, I believe, have made special trips to London to study the operation of the London General Omnibus Company, and if I remember rightly, they returned with a report that slightly modified the prior position of the electric railway industry from the attitude that buses were of no use as a public carrier to a position that they might possibly have a value as feeders to establish rail systems and that they could not handle mass transportation. In view of this report the statistics of the Yerkes group of street railway systems of London and the London General Omnibus Company present some rather interesting data.

These combined rail systems carried during the year 1924 a total of 298,356,083 passengers, an average daily number of 886,740. The London General Omnibus Company and one or two smaller bus operating companies in London carried a total of 1,456,767,460 —the average daily number of passengers carried being 4,397,078.—[The author of this paper is misinformed concerning the meaning of the figures he presents. The number of passengers carried by the combined rail systems, which he states to be 298,356,083, is not the total carried by the street railways as he says, but the number carried on certain rapid transit lines. This difference should be borne in mind by the reader when considering the figures in this and the following paragraphs. A more detailed explanation of the figures is given in an editorial in this issue.—EDITOR.]

It is interesting to note that during the year 1924 the railways carried 7,185,733 passengers less than they did in the year 1923, and the buses carried 111,289,922 passengers more than they carried in the year 1923, which would seem to indicate that the trackless system in London is becoming more popular than the rail system. These figures from the authentic reports of the two systems certainly leave one in grave doubt as to the value of the work of the investigators who made reports so contrary to these figures to our electric railway industry.

Another feature that is outstanding and which will be referred to later is the fact that the combined railways operated 58.896 079 car-miles to carry their 298,356 083 passengers, while the London General Omnibus Company operated 137.050 535 miles to carry its passenger load of 1,158,411,377. You will see by comparison of these figures one of the most outstanding features of trackless operation—that of flexibility.

Flexibility has been most generally referred to as affording relief to traffic by ability to flex and flow, and wiggle its way along with the automobile traffic. The real meaning of flexibility in the matter of trackless transportation to those engaged in it, however, is the financial gain to be made by reason of this flexibility or building a service to fit the volume decrease along all lines traveled.

The motor coach in our growing cities is undoubtedly the intermediate step in progress between the present electric railway system and the subway, as it affords the means of more rapid movement of passengers than can be accomplished by the rail system, as well as freedom of movement of all other traffic, and these advantages are accomplished at a cost which is not prohibitive. Mass traffic in the congested section of London moves more miles per hour than does traffic on streets of most of our large cities in the congested sections where street cars and general traffic are attempting to use the same thoroughfare.

Comparison in our own city of Detroit has shown a movement in the rush-hour period on one main artery with street cars and general traffic attempting to move together of only 3.4 m.p.h., whereas measurements made of the flow of traffic on other arteries not encumbered with street cars showed more than twice the mass of vehicular traffic moving at a speed of 9.2 m.p.h.

Very few trackless operations of electric railways are profitable today, particularly in our large cities. Several that have been investigated clearly indicate where the trouble lies. Electric railway practices have been applied—practices that, while they might fit the rail system, are foreign to successful operation of the trackless vehicle, and results have been disappointing. Advantage must be taken of the ability to minimize dead miles, not only as to service schedules but location of housing facilities as well.

The Detroit Motor Bus Company began operation in June, 1920. The first lines operated 625,385 miles for the six months and twenty days, and carried 2,335,475 passengers. Performance thereafter was as follows:

Year	Miles Operated	Passengers Carried
1921	2,489,571	9,135,605
1922	3,547,946	14,322,026
1923	4,922,543	19,457,436
1924	7,935,327	29,162,596
1925*	9,500,000	33,786,400

*Ten months.

During the year 1925 we have made our first steps in suburban operation. Ours is in reality one of contiguous villages and cities—a service which has been much appreciated by the public, and which is already proving profitable. Some of these districts already had service, and the operating companies, numbering five or six in all, were purchased by the Detroit Motor Bus Company. By revamping these lines and changing them to afford a better public service the passenger revenues have been increased on all lines, and on some as high as 915 per cent gain has been made. Of course, the amount of service has been increased as well.

During the first four years of our operation the principal part of our fleet consisted of double-deck buses, seating from 54 to 66 passengers, mounted on solid tires. We are still operating all of this fleet, plus a number of double-deck buses with pneumatic tire equipment, and in addition to this our fleet of single-deck buses seating from 28 to 33 passengers has been enlarged considerably.

Our practice has always been 100 per cent upkeep of the vehicles we are oper-

*Abstract of a paper presented at a meeting of the Mid-West Electric Railway Association at Wichita, Kan., Nov. 30, 1925.

ating (which means in actual practice 85 per cent), and this has been a very heavy item of expense owing to the small progress that has been made in the art of design of vehicles for a service of this kind.

The cost realized in our first 4½ years of operation ranged between 30 cents and 31 cents per bus-mile. This covered absolutely every item of operating cost —depreciation, taxes, etc. During the past year a gasoline tax has been imposed as well as a weight tax, both of these being state measures, and in addition to this practically all of our fleet have been changed to pneumatic tire equipment. These items in themselves closely approximate 3 cents per bus-mile. We are today operating our double-deck buses, including these added tax items, at 34 cents per bus-mile, single-deck buses wholly within the city 23 cents per bus-mile, and suburban service 20 cents per bus-mile, the entire fleet operation averaging 27 cents per bus-mile.

Through the use of pneumatic tires our cost was somewhat increased. Our experience up to date, however, clearly indicates that this increase will be more than offset by the saving in wear and tear of our vehicles, to say nothing of the better sales value of our service.

Our company was able to pioneer an immense amount of service over the past year into territory that did not pay. In fact, 35 per cent of our mileage for a period of five continuous months was under the paying limit. These conditions have been overcome by careful study of the districts served. In some instances the remedy has been change of schedule; in others, both change of schedule and slightly less service. In most instances the remedy was found in change of schedule and continuous increase in service.

It is difficult to make comparison of the electric railway figures with bus operating figures without full knowledge of the various elements involved in the railway cost. The business of transportation is one that belongs to those who command large capital; and like all other large business operations, control under one group of capital covering a large number of these city and intercity operations is an economic necessity. Transportation should be in a position to expand continuously in every community where operated, as necessity demands. Change in attitude and modernization of methods are necessary to meet present high costs which are apparently permanently fixed upon us. If further consolidation of these interests could be brought about, economies would be effected and an improved public service could be rendered that would justify such consolidation.

Figures which we have indicate a lower operating cost, generally speaking, than the track system; and this fact plus other advantages would seem clearly to indicate that the electric railway industry might better receive this trackless transportation in the light of the march of progress, and embrace the opportunity to increase business, to operate profitably, and to continue to be the most important link in the progress and development of the communities served, as it has been in the past.

Economic Pressure Will Restore Popularity of the Common Carrier*

By J. L. Adams, Superintendent of Transportation Denver Tramway

UNDOUBTEDLY the outstanding and most difficult of present day electric railway problems is the privately owned automobile. By means of an automobile a person may travel rapidly and comfortably by the most direct route between desired points. Doubtless this presents, with its related and contingent obstacles to the common carrier type of urban transportation, the most obstinate problem we have to face today. The situation is best analyzed by tabulating the virtues and the defects of both the automobile and the street car, and comparing these with a view toward discovering ways and means of eliminating as far as possible the street car's defects and making its virtues offset those of the automobile.

Primarily, the automobile renders a personal service. It picks one up at his door, conveys him by the most direct route, and deposits him at the door of his destination. This is a service impossible to the street car, due to the necessity of a permanent roadway. The street car is secondary even to the motor bus in this service.

But now let us compare the automobile's admitted virtue in this regard with the street car's apparent deficiency. The wide and ever-increasing use of the automobile has brought about a congestion of the streets which, in most cities, has necessitated the enactment of stringent parking regulations which make it necessary for the automobile user to park his car, in many instances, some blocks away from his desired destination, be it his office, bank, store or whatsoever. If he would have his car within reach at all times in the restricted parking district, he must put it in an auto park or garage and pay the fee, which, added to the cost of operation, makes his personal transportation service rather expensive. Then, too, there is worry about a frozen radiator in the winter and a motor hard to start, slippery roads, and so on. It would seem that the street car has an advantage over the automobile, since people seldom have to walk more than a block or two to the car or from the car to their destination.

By and large, for convenience and economy, the street car obviously puts the automobile out of the running as far as a conveyance to one's business is concerned, save for the possible exception of a few lines of business, as, for instance, salesmen. But notwithstanding the foregoing, automobiles by the hundreds continue to carry people to work. Why are they used in spite of the higher cost and less convenience? The answer to that question is even more distressing and significant than is the automobile's competition and the consequent loss in revenue. The answer is that the growing and now extensive use of the automobile has created in the riding public a habit of thought and an attitude of mind in which they are not satisfied with a class of service that approximates fulfillment of the needs of many, but demand a service that exactly suits their individual requirements. As many of them as can possibly do so are bent on having this personal service, regardless of cost or actual convenience. It seems to me that the solution depends on whether the riding public will cling to its idea of individual service at whatever cost or will be forced by economic necessity to return to the idea of group service.

Yet another effect of the extensive use of the automobile justly attracts the attention and consideration of transportation men. The automobile is causing radical changes in the character of the growth of cities. There seems to be a tendency for small business centers to develop in or near residential sections, from which they may be quickly reached by automobile or by walking. This tendency, away from the centralization of business, seems to be one of the automobile's answers to two problems of its own making; that is, parking and street congestion in the downtown business districts. These outlying business centers in two ways are the direct cause of a decrease in revenue to transportation companies. First, they are frequented by automobile owners who have been discouraged by traffic and parking conditions from driving into the downtown district to shop. If these centers did not exist these people would no doubt leave their machines in the garage and go downtown on the street car. Second, these centers are within easy walking

*Abstract of a paper presented at a meeting of the Mid-West Electric Railway Association, Wichita, Kan., Nov. 30, 1925.

COMING MEETINGS OF *Electric Railway and Allied Associations*

Dec. 17—New England Street Railway Club, Copley Plaza Hotel, Boston, Mass.

Jan. 14-15—Kentucky Association of Public Utilities, Annual Meeting, Brown Hotel, Louisville, Ky.

Jan. 20-21—Central Electric Traffic Association, Miami Hotel, Dayton, Ohio.

Jan. 22-23—Central Electric Railway Accountants' Association, Miami Hotel, Dayton, Ohio.

Jan. 27—New York Electric Railway Association, Hotel Commodore, New York, N. Y.

Jan. 28-29—Central Electric Railway Association, Lincoln Hotel, Indianapolis, Ind.

Feb. 11—Central Electric Railway Master Mechanics' Association, Portage Hotel, Akron, Ohio.

April 13-16—Southwestern Public Service Association, Galveston, Tex.

distance for numbers of persons who do not own automobiles and who, under normal conditions, would be street car riders. This last mentioned may be taken as one example among the many indirect ways in which the automobile is causing a loss in street railway business.

Another thing which is causing a decrease in revenue is the radio. When it is made possible for a family to sit in their living room at home and obtain real enjoyment by listening to a very entertaining program over the radio, it is seen there is very little excuse for any one in the family to go downtown to obtain such entertainment. The statement is borne out by the loss of business in the different theaters.

The outcome of the struggle between the automobile and the street car depends upon whether the riding public continues in its desire for an individual service, regardless of cost, or whether economic necessity will eventually force it to return to the idea of group service. I confidently expect the ever present and most powerful tyrant, "economic necessity," to force his will upon the people in the matter of transportation, as he does ultimately in all things else. Sooner or later the riding public must of necessity return to the use of the street car, or, since the motor bus enters into the question, the common carrier type of transportation. Whether it will be sooner or later depends in a large measure upon just how safe, comfortable and speedy we make our transportation service and how long we take in doing it.

Overhead and roadbed construction have less bearing on the winning back and holding of patronage than the transportation unit itself. Changes in design and operation of rolling stock are generally considered to offer the best means for reviving lost patronage on street railway lines. Such improvements in cars which should attract the riding public are safety, speed, passenger comfort, convenience and appearance. Those which appeal to the owners are durability and economy in operation and maintenance. To embody all these features a car must be equipped with modern motors and control, good trucks, comfortable seats, attractive interior finish and appointments, efficient safety devices, and a body of attractive but sturdy design. It must be light in weight in order to operate with a minimum of power. Such cars may be found in increasing numbers on many properties and are subjects for thoughtful study and continual improvement.

To make cars more attractive to patrons it is necessary to provide them with more comfortable seats, thermostatically controlled electric heat, pleasing interior finish, excellent lighting, illuminated signs, dependable signals and suitable floor coverings.

More attention is being given daily to noise reduction as a factor in regaining popular favor. Elimination of noise in a vehicle having steel to steel contact with its roadway is a difficult problem, and demands a mechanical perfection and quality of maintenance far beyond past requirements. These complexities necessitate costly rehabilitation of present motors, trucks and even car bodies, and are made possible only through the acquisition of better shop maintenance tools and facilities, accompanied by careful instruction and education of the maintenance forces.

Exhaustive studies of traffic and passenger movements have to be made in order to schedule cars on all lines to best meet transportation demands with the fewest possible car movements. Schedule speeds are increased in order to compete in some measure with automotive vehicles, and the added accident risk to passengers must be met by the installation of safety devices, such as folding doors and steps, at a very considerable expense.

In Denver we have retained our average speed of 10.4 m.p.h., even with the placing of practically 50 per cent of our service on one-man operation within the last eighteen months. We have the original system of dispatching cars by telephone. This system was installed at the time the company started, in 1888, and was our method of operating our cars from that year up to 1921, when we changed to the system of running cars by schedules issued by the schedude department. This arrangement, however, did not replace the dispatching of cars by the dispatcher, as he still has the control of all operation by listing each car and run on the dispatching sheet as the cars come out of the carhouse and report to him, and again when they report on the last leaving time at night coming to the carhouse. By retaining the dispatching office we are better able to keep control over the system in the handling of delays caused by parades, fires, etc., and it is also more economical.

Another factor in the building up and maintaining of high speed is the car design, which will permit of the proper passenger movement through cars, which governs the location of entrance and exit and the method of fare collection. Late car designs show tendencies to radical departure from established practices, both in body design, arrangement and control. The car of the future will be lighter, more flexible in operation, will show a marked reduction in unsprung weight, may even tend toward automotive standards in choice of materials, accuracy of workmanship in moving parts and running gear, and maybe unlooked for advancement in the means of propulsion.

Popularizing Electric Railway Transportation*

By F. G. Buffe
General Manager for Receivers Kansas City Railways

URBAN electric railways are in a much better position today than they were a few years ago. The fixed fare has been eliminated and the public knows that a fare commensurate with the service rendered and its cost must be paid. The public realizes that street railways are necessary for mass transportation; that nothing so far known can take their place as a practical or economic substitute, and that an up-to-date, efficient transportation system is vital to the growth and prosperity of any community. There is a further advantage in the realization that our modern cities cannot be rebuilt to take care of individual transportation, occupying 80 sq.ft. of pavement space, and that mass transportation and conservation of available space for necessary traffic movement is essential if the business districts of our communities are to be preserved.

There is also dawning upon many people a realization of the economic thoughtlessness of paying from 75 cents to $1.50 for private automobile transportation to and from work, when, due to congestion and parking trouble, neither time nor comfort is gained as an offset.

The electric railway in our cities is in a position to expand on a new basis and with much assurance of a bright future. The question today is, what will our owners, bankers and operators do to take advantage of the opportunity, to encourage this receptive attitude on the part of the public and permit the street railway to occupy its rightful place as the dependable, popular method of city transportation?

Certainly we cannot cater to a 1926 public with 1900 ideas or plants. In how many cities a few years ago could it not truthfully have been said that the street railway was the most run-down and obsolete establishment in the city? The last ten years have seen many changes in every line of activity. The automobile of ten years ago would not be much of a competitor to those built today.

In every line, especially those selling service, there is a constant effort to keep ahead of public taste and demand. The American people are spoiled darlings of invention and civilization. Many a man who in his youth took a Saturday night bath in a tub alongside the kitchen stove now yells to heaven if he can't get a room and bath every night. The same fellow who formerly made his railway journeys in a smoking car now feels aggrieved if he cannot get a drawing room in a Pullman. We have been, until recently, trying to sell transportation in old, run-down street cars to these critical, exacting people; and the result has been that many of our customers have left us.

Yet in the street railway business many of us are still furnishing service in twenty-year-old cars, or cars in which the seats, floors and finish are patterned after the models of 1900. We have devoted our designing talents to weight reduction, and car builders, designers and operators gave a dinner every time another 20 lb. was eliminated! The public is not interested in

*Abstract of a paper presented at a meeting of the Mid-West Electric Railway Association, Wichita, Kan., Nov. 30, 1925.

whether the car weighs 20,000 lb. or 35,000 lb.—except as the weight is reflected in riding qualities.

We have built track for permanency and, regardless of whether it was noisy or quiet, every year added to its life has been an engineering accomplishment. Does the public care whether a track lasts fifteen years or twenty years, or would it rather have a quiet, easy-riding roadway?

There has never been a change proposed, a device added, but the inevitable question has been: Will it increase maintenance? What effect will it have on operating expense? Of course this element of expense is essential; but would it not be well also to ask: Will it increase business? Will it attract new riders?

This is not an indictment of street railway operators. It is the natural result of herculean efforts to keep the breath of life in an essential industry that, during the most trying times of the past ten years, was treated like a stepchild by those it was serving. With expenses jumping every month—with revenues reduced by jitneys and private automobiles—with public authorities turning deaf ears to pleas for assistance or applying slow starvation through delays and procrastinating methods, it is no wonder that harried managements, between the millstones of vanishing "nets" and frantic investors, emphasized economy to the exclusion of everything else.

The public, after all, is more to blame for whatever is lacking in car service than the operators. In every other business an adequate charge is made for what the service or the product is worth. People know that a cheap price buys a cheap article. They don't expect porterhouse steak when they buy chuck. The popular hotel is the high-priced hotel. And following the old adage that "Them what has, gets," the fellow with the high price becomes more popular because he has the money to give more and better service.

Don't Go to Extremes

There is a slight tendency to run to extremes. For years there was criticism that operators were in a rut; that they were slow to adopt new methods; that they were asleep at the switch. This propaganda has now brought about a condition where, to avoid the appearance of staying in a rut, some of us are so anxious to follow advanced ideas that there is danger of not being able to see us for the dust. It is easy to go to extremes, and it is always necessary to keep in mind the fact that our fares are practically fixed and we are selling mass transportation. Unquestionably we could do a host of things if we could charge an adequate price for what we give. We must do our modernizing within the limits of our fares.

Beyond a doubt there are many things that can be done to popularize car riding, but the relation of expense to income must be on the right side of the page. There is a limit and a law of diminishing returns beyond which we cannot go. Like fare increases, after a certain point the higher the fare the less the revenue. When we give a service that costs more to produce than we receive we are getting too popular. The real question is: What can we do to popularize our service; to attract more customers, and at the same time make a fair return on the investment necessary to render the service?

Before we can make our service popular we must make it good. The comfort and convenience of passengers must come first. A well-built, well-maintained track is essential, one that will furnish as smooth and quiet a ride as is possible to give. A bumpy, noisy track with low joints and bad pavement will not make us popular with those who ride the street cars, those who use the streets, or those who live or have their business on them. A bad crossing will bring down the anathemas of every automobilist who crosses, and he is the customer for whom we are gunning.

Eliminate Obsolete Cars

There are today 25,000 obsolete cars running in the United States. These cars are noisy, run down at the heel, inefficient. They are business repellers instead of business attractors. They are neither inviting nor economical. They have been rehabilitated, maintained, revamped and repaired, but they are still the same old vans they always have been. They are power eaters and track destroyers. They give an operating department the jumps because operators know what they are and what they are doing to the business.

The first step in popularizing service is to use more attractive equipment. Even if new cars are out of the question, there are many things that can be done to make old ones more pleasing in appearance and more comfortable. Rubber tiled floors, more comfortably upholstered seats, more attractive finish inside and out, are possible within reasonable expense limits. Attention must be paid to noise reduction.

It has been proved in several cities that new, attractive equipment invites patronage and increases receipts. Not only will receipts be increased, but expense will be saved in power, labor and maintenance. Many changes on the economy side have taken place in twenty years. Light-weight body design, modern motor construction and labor-saving devices have produced cars that will not only attract business and increase receipts, but will also reduce expense.

We haven't done enough advertising. We have a real service to sell and a host of prospective customers who are not using it. I believe we shou'd advertise as actively, as consistently and as logically as a department store. I don't mean the old-style, so-called good-will copy with an appeal to high heaven for help in every line. I don't believe the public is interested in the number of men in the shop or tons of coal we burn. I mean regu'ar business attracting copy, directed at the man who uses his automobile in preference to our cars.

Bus installations where they are adopted will help popularize service. Co-ordinated service spells progress to the public as a real, honest effort to supply what is desired, to fill in the gaps and give the man who desires a preferential service what he wants. It shows the public we are in the transportation business, ready to sell it what it can use.

I shou d like to see an experiment tried, and I hope some day to do it. I should like to select one line, serving a high-class residential section, and to rebuild the track throughout, having noise reduction in mind instead of permanency. In other words, if necessary, sacrifice five years of track life in order to get the quietest, smoothest track. On this line put new, attractive, highly comfortable cars with rubber-tiled floors and upholstered seats. These cars should be operated with one man, making possible a highly frequent service, with few passengers per car. The stops should be spaced a proper distance apart, in order to attain the maximum schedule speed. Then I should like to advertise this line and this service thoroughly and consistently. Of course, courtesy, politeness and personal service in the crews would be matched by cleanliness, freshness and neatness in the equipment. And it is my belief that very soon there would be carried a lot of passengers who hadn't been on a street car in years. It would be an interesting and profitable experiment.

Meeting of the A.E.S.C.

APPROVAL of a report on wrench-head bolts and nuts and wrench openings constituted the principal business at a meeting of the sectional committee of the American Engineering Standards Committee on the standardization of bolts, nuts and rivet proportions held at the United Engineering Societies Building, New York City, Dec. 2. Those present included A. E. Norton, chairman; J. A. Anglaga, J. H. Buckley, E. Burdsall, Robert Burnett, J. H. Edmonds, H. P. Frear, F. O. Kichline, C. B. LePage, C. F. Newpher, Andrew Schwartz and C. W. Squier.

The sub-committee on wrench-head bolts and nuts and wrench openings presented a final report on dimensions which was adopted by the members present for submitting to letter ballot for approval of all members of the sectional committee of the American Engineering Standards Committee. This report included ten tables of dimensions as follows: (1) Rough and semi-finished square and hexagonal regular bolt heads; (2) finished square and hexagonal bolt heads; (3) finished hexagonal cap screw heads; (4) set screw heads; (5) rough and semi-finished square and hexagonal regular nuts; (6) finished square and hexagonal regular nuts; (7) finished and semi-finished jam nuts; (8) hexagon light nuts; (9) hexagonal and square machine screw nuts and stove bolt nuts; (10) open end wrench openings.

These proposed standards are intended for general use by all industries and the consequent replacement of the various existing standards now in use. When approved, they will become American national standards. The subcommittee has analyzed existing practice in this country and has attempted to work out tables of dimensions which

will be acceptable to the various industries and which will cause little disturbance of present practice. Wherever possible, the U. S. standard sizes of bolt heads and nuts have been reduced to some existing shop standard after giving consideration to theoretical analysis of stresses in bolts and nuts and making tests of samples. Deviation from theoretical sizes has been made in order to keep the number of wrench openings small and to conform to certain manufacturing processes. In fixing tolerances, the greatest possible tolerance has been allowed, with the realization that they will seldom be found in the product and that the manufacturer will set up his working gages in such a way as to rob the workmen of part of the tolerances, thus insuring that all of the product which is accepted by working gages will pass easily the inspection gage.

The number of wrench openings has been reduced through simplification of the outside dimensions of bolt heads and nuts and the elimination of sizes little used. This action tends to reduce the number of sizes of stock for manufacturing which are carried by manufacturers. Minimum wrench openings have been made to provide a positive clearance between maximum nut and minimum wrench, and the tolerances on wrench openings are plus only. This insures a fit of the wrench to the bolt head and nut. The tolerance allowed the wrench manufacturer has been made as great as possible without causing the deformation of the corners of bolt heads and nuts. In all cases the nominal or basic widths across flats of bolt heads and nuts have been taken as maximum sizes and the tolerances on the bolt heads and on the nuts are minus only.

Other types of bolts, nuts and rivets, on which the work of standardization is well advanced, includes large and small rivets, slotted head bolts and screws, and track bolts and nuts. Sub-committees dealing with these subjects expect to make final reports early in January.

Future of Motor Coach Regulation*

By R. B. Campbell
Secretary-Treasurer and General Manager
Arkansas Valley Interurban Railway

AMONG prominent leaders in all branches of transportation there is much honest difference of opinion concerning legislation the purpose of which is the regulation of the motor coach and truck as common carriers. The question of the kind of regulation, the extent to which it shall go—in other words, the details—are matters of much speculation and disagreement among transportation men, depending a great deal from what direction the subject is viewed. It is a matter of common knowledge, however, that there is, at this time, much greater unanimity of opinion than there has been in the past.

State regulation began in 1914, when Pennsylvania gave its Public Service Commission power to regulate motor vehicle common carriers. Since that time, state regulation has grown till now 36 states have enacted laws giving their regulatory commissions some measure of control over such carriers. The purpose of all this legislation was not always the same, depending on the group that brought it about, and yet through it all is seen the same principle as that which runs through rail regulation. In fact, in many states the same regulatory power and authority which the commission has in governing railroads and other public utilities is specifically delegated to it in the regulation of motor vehicle common carriers.

Some of the principal purposes sought to be accomplished are as follows:

1. The fixing of just and reasonable rates and the prevention of discrimination.

2. The preservation, maintenance and conservation of the highways by the fixing of license fees and the proper allocation of same, limiting weights and speeds of vehicles.

3. The safety of the highways by providing for liability insurance and surety bond for the payment of damages for personal injuries and property loss; fixing of speed limits and size (clearance) of vehicles; supervision and regulation; accident reports; suspension and revocation of licenses.

4. Penalties for violation of rules and orders.

5. The protection, through the so-called certificate of convenience and necessity, of the existing transportation facility, whether it be rail or motor carrier, from unnecessary and destructive competition, where such facility is rendering adequate service. Thirty states provide for the issuance of certificates of convenience and necessity.

Considering the motor carrier from the federal or interstate aspect, we find a serious condition confronting us. Transportation, in the best economic sense, is essentially the duty of an agency having a monopoly in its field. Any transportation agency, in order to provide efficient service and earn a fair return, must have a monopoly in its particular territory. Any territory, to insure itself satisfactory service of a permanent nature, must protect that transportation agency against unwarranted and destructive competition. The only way in which service can be maintained is to rely on one agency, and see to it that this agency while providing complete and adequate service is compensated for its efforts.

In the 36 states having regulation, the situation was fairly satisfactory. Except in the matter of rates on traffic between the states, the laws were applied alike to vehicles operating intrastate only and those operating across state lines, and hence interstate. It was thought, and so held by the commissions, that until Congress provided regulation the states were free to act. So the regulatory field was pretty well covered, and there was little demand for federal legislation, until early in 1925 the United States Supreme Court, in three decisions, laid down this principle of law—that regulation of interstate commerce is inherently beyond the power or authority of the state. Applying this principle, the court held to be unconstitutional the state laws that sought to give state authorities power to regulate the entering into interstate business.

These three cases were Public Utilities Commission of Michigan vs. Duke (decided Jan. 12, 1925); Buck vs. Kuykendall, director of public works, State of Washington; and Bush vs. Public Service Commission of Maryland (both decided March 2, 1925). In each of these cases the state statute requiring the motor carrier to procure a certificate of convenience and necessity was held to be unconstitutional, because by the commerce clause regulation of commerce between the states is reserved exclusively to the federal government. The effect of these decisions was to invalidate all state laws in so far as they attempted to enforce the taking out of certificates of convenience and necessity by operators engaged in interstate motor traffic over the public highways.

Inasmuch as the requirement that a certificate of convenience and necessity is a prerequisite to operation and must be obtained is the very foundation of the regulatory structure, without it the purposes sought to be accomplished by the state legislatures fail utterly. To avoid regulation entirely the operator has only to cross a state line. It is obviously impossible to obtain satisfactory results with motor transportation half regulated and half unregulated. Nothing can be accomplished by state regulation of intrastate commerce if the interstate end of the haul is unregulated. So existing agencies of transportation operating contiguous to state boundary lines have no protection whatever.

I have no doubt that the causes which brought about regulation in 36 states will solve this problem. In fact, various national agencies are working to that end, and I have no doubt will solve the problem much as it has been solved by the states. I think the Supreme Court decisions came about not so much because of any abuse of power by the state regulatory bodies or because they showed bad judgment in the exercise of that power, but because of the fundamental principle involved, that interstate regulation belongs to the federal government.

No one can predict just what form government regulation will take, but there is no doubt in my mind that Congress will take action of some kind. It is being quite generally suggested that regulation be left largely with the several states, acting through their regulatory bodies, by authority specifically granted by Congress; that the Interstate Commerce Commission be

*Abstract of a paper presented at a meeting of the Mid-West Electric Railway Association at Wichita, Kan., Nov. 30, 1925.

authorized to grant to interstate common carriers certificates of convenience and necessity, and that such certificates be prerequisite to lawful operation; also, that the Interstate Commerce Commission act as arbitrator as a court of appeals from decisions of the state regulatory bodies, or in the event of disagreement between the regulatory bodies of two or more states sitting together as a joint board considering applications for certificates of convenience and necessity; and that beyond generally supervisory authority, that the state regulatory bodies shall govern.

Some of the proposals which will be submitted to Congress are:

1. Issuance of certificate of convenience and necessity through the Interstate Commerce Commission or other regulatory body. There may be a "grandfather" clause attached to the bill.

2. Rate regulation, possibly based on the railroad standard of 3.6 cents per mile.

3. Application of the entire railroad transportation act of 1920 to the bus business, with earnings limited to 5¾ per cent and with the recapture clause.

4. Centralization of authority in one agency, such as the Interstate Commerce Commission.

5. Power delegated to state regulatory bodies by Congress, or by the Interstate Commerce Commission, which would likely mean that bus lines not now holding state certificates would not be granted federal certificates.

Nature of the Proposed Regulatory Bill

A bill has been drafted by the National Association of Railroad and Utility Commissioners and will be sponsored by that association before the forthcoming session of Congress. This will contain the usual definition of terms, and does not differ greatly from the definitions used in state regulatory bills. Motor carriers are divided into two classes, those operating between fixed termini or over a regular route, and all others. The state regulatory board of the state in which any part of a transportation service in interstate commerce is performed is made a federal agency and given authority to administer within that state or in cases authorized under this act in co-operation with the boards of other states the provisions of this act. Other sections refer to certificates of convenience and necessity, applications, hearings, indemnity bonds, etc.

I do not think the exact form of the regulation is so important as is the means of performing it. The problems of bus operation are essentially local problems. Local authorities are best informed on these problems, and obviously best able to judge and solve them. So I think a maximum of authority should be given the state regulatory bodies, and a minimum of supervisory authority vested in Washington. Simplicity of detail and operation ought to be the aim. Proceedings ought not to be prolonged nor made unduly expensive by reason of any requirement that they be carried on at long distances from the communities in which the operation is sought to be carried on.

Dec. 17 Date of Next New England Club Meeting

NOTICES have been issued for the next meeting of the New England Street Railway Club, which will be held in Boston on Dec. 17.

The afternoon session is called for 3 o'clock at the Boston Elevated schoolroom at Sullivan Square, Charlestown. Harold E. Potter of New Bedford will speak on "Educational Work," and H. H. Norris, educational adviser of the Boston Elevated, will give a presentation of the educational work of that company.

Dinner will be at the Copley Plaza Hotel, beginning at 6:15. The evening meeting following will be held in the Swiss Room. H. T. Sands, vice-president Charles H. Tenney & Company, will speak on "Public Relations—What and Why." Labert St. Clair, director of publicity American Electric Railway Association, will have as the title of his address "Some Hoosier Recipes."

American Association News

Purchases and Stores

METHODS of disposing of surplus new material in the storeroom was the outstanding subject of discussion at a meeting of the purchases and stores committee of the American Electric Railway Engineering Association held at association headquarters, New York, on Dec. 7. At the morning session review of existing manual sections was considered. Continuation of study of routine methods to be followed in the purchasing and stores department and methods for handling freight and express bills was decided upon. The afternoon session opened with consideration of co-ordinating materials and supplies with the operating budget. Disposition of surplus material was the last matter to be considered at the meeting. Sub-committees were appointed to investigate and report upon each of these subjects.

Those present were P. F. McCall, chairman; A. E. Hatton, A. A. Ordway, C. A. Harris, J. Y. Baylis, B. W. Forkner, F. L. Wheaton, A. S. Duncan and W. J. Walker.

Engineering Symbols

REVIEW of the work accomplished by the preceding committee on engineering symbols constituted the principal work of the new committee, which held a meeting at the association headquarters, New York, on Dec. 2. Those present were H. W. Codding, chairman; J. D. Kent and C. W. Squier. Discussion of the work to be undertaken during the coming year brought out the fact that a sectional committee of the American Engineering Standards Committee is being formed to standardize drafting room practice and that it is quite likely that this committee will also take up the preparation of engineering symbols. A preliminary meeting of this committee was held on Dec. 4, and it appears that the work to be undertaken by the A.E.R.E.A. committee will be only slightly affected by the work of the proposed sectional committee. It then appears desirable to prepare drawings of symbols so that they can be circulated for general comment.

All of the various symbols that had been agreed upon by the preceding committee of the association were gone over, and it was agreed that these be put in such shape as to show the desires of the committee and to be of assistance to representatives of the association on the sectional committee which would take up this subject. If it appears that the sectional committee cannot complete its work speedily, additional work will be done by the special committee of the association on engineering symbols toward the completion of the most important part for inclusion in the Manual as a guidance for member companies.

Special Trackwork

CONSIDERATION of a program for continuation of work on specifications for special trackwork materials marked the tenth meeting of the sectional committee on specifications for special trackwork materials and design of 7-in. plain girder rails, held in New York, Nov. 19. The chairman stated that, based on his interpretation of the principles laid down in the report of the sub-committee, he had prepared several typical specifications and submitted them for discussion. After a lengthy consideration of both the report and the typical specifications submitted, it was decided that the fundamental principles outlined in the report be submitted by letter ballot to the entire sectional committee for its approval or disapproval before proceeding with any further work on the calculation of specifications.

Those present were C. A. Alden, E. B. Entwisle, G. L. Fowler, R. J. Davidson, Jr., representing J. B. Strong, R. E. Hesse, J. B. Neubert, E. M. T. Ryder, G. W. Snyder, H. H. George and V. Angerer, chairman.

Special Reports Available

SPECIAL reports have been prepared by the Bureau of Information and Service of the American Electric Railway Association and are available to member companies upon request, as follows:

Bulletin No. 56. Public Ownership and Operation of Electric Railways. A compilation and summary of the outstanding facts concerning the public acquisition and operation of electric railways. It includes a list of all publicly owned or operated railways, a history of the events leading up to their public acquisition, the terms on which they were taken over and statistical data on the results of their operation under public management.

Bulletin No. 57. State Restrictions on the Operation of Motor Buses by Electric Railways. A compilation of state laws regarding the operation of motor buses by electric railways, including opinions of state regulatory commissions as to the legal status of bus operation by electric railways.

In addition to the above, supplements to the Wage Bulletin, Fare Bulletin and Cost of Living Studies (Bulletin No. 58) have been prepared, bringing them down to date.

Maintenance of Equipment

Pit Wheel Grinders Used in Denver*

EACH of the four divisions of the Denver Tramway, Denver, Col., has been equipped with a pit wheel grinder so that wheels can be ground without removing them from cars. The use of these pit wheel grinders has made it possible to grind wheels frequently when but a small amount of grinding is necessary at one time rather than at longer intervals when a large amount is required. This makes it possible to remove small flats and corrects the tendency to develop thin flanges or double flanges and maintains a proper wearing face on the tread. Increased life results for both wheels and tracks and a more comfortable riding car is produced. All this is done by the use of the pit wheel grinders without the labor incident to the frequent removal of wheels and axles from trucks and the transporting of them to the shops for grinding or turning. Also, the car does not have to be taken out of service for long intervals.

An accompanying illustration shows one of these pit wheel grinders. In operation the car is run over the grinder until the pair of wheels to be ground rests on the two movable rails directly above the grinding wheels. Two hand jacks are used to raise the trucks so as to take the weight off the movable rails. In the accompanying illustration the jacks will be seen in the center between the two rails. With the weight removed the movable rails can be swung sidewise, as shown, and the grinding wheels can then be raised into position so as to bear against the part of the wheel to be ground. Grinding then takes place in the usual manner.

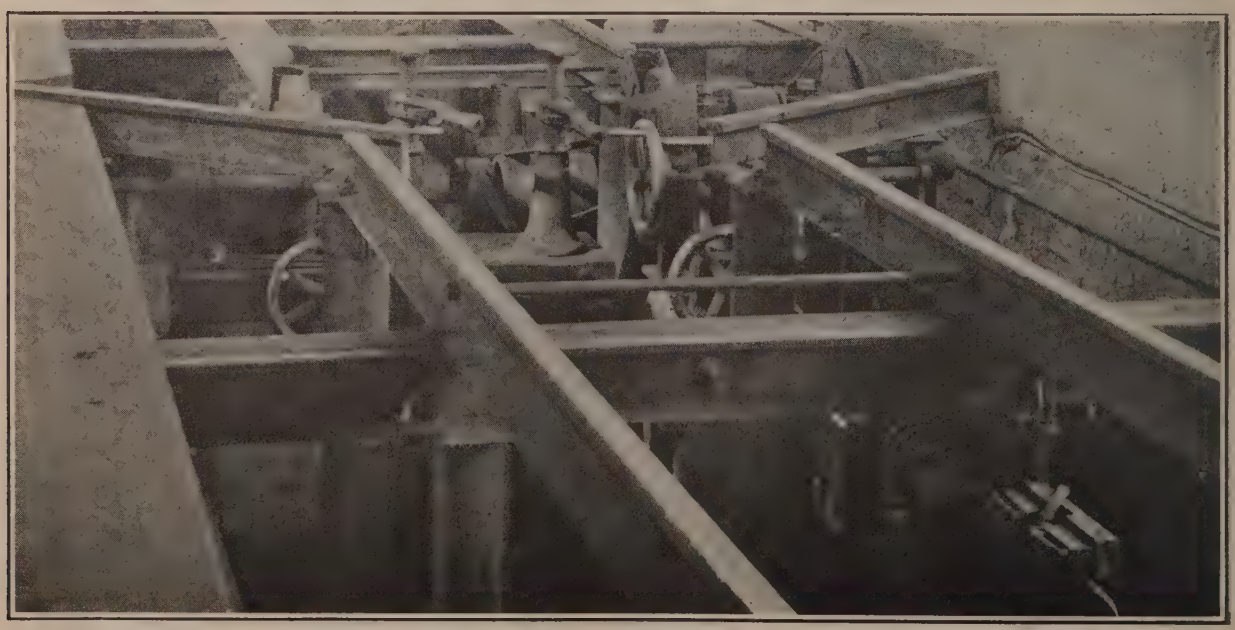
Grease Lubrication for Brake Valves*

UNTIL the early part of 1924 trouble was experienced with the M-28 brake valves on cars operated by the El Paso Electric Company, El Paso, Tex. These brake valves became stiff between inspection periods and the trouble was found to be caused by improper oiling of the valve stem gasket. The method of lubrication used when the valves were giving trouble was to drop oil into the oil well in the stem and allow it to lubricate the stem gasket by gravity feed. Air pressure, however, forced the oil back out between the stem and the bushing, thus causing the gaskets to run dry.

To overcome this trouble the oil well in the stem was drilled deeper, so that it was on the level with the top of the stem gasket. An opening was then made into the oil well, and a Pressurite ¼-in. fitting was installed on top of the brake valve stem. This enabled a Zerko gun to be used for lubrication. A mixture of cup grease and powdered graphite was used as the lubricant. This was forced into the oil well onto the face of the gasket with the grease gun. Several cars were equipped for trial with these fittings, and as the trouble was eliminated all cars operated by the company were equipped with these fittings. No further trouble was experienced with the brake valves.

This new method also saves considerable time in lubrication over the old one, for when the car comes in for inspection all that is necessary is for the oiler to attach the grease gun and give it a shot, while with the old method it was necessary to take the valve apart to oil it properly.

*This article is based on material included in the brief submitted to the Charles A. Coffin Prize Committee of the American Electric Railway Association by the company named.



Type of Pit Wheel Grinder Used in the Shops of the Denver Tramway

The practice of drilling motorman's valves for grease fittings is also used by the Houston Electric Company, Houston, Tex. Alemite fittings are used by this company. In addition, all bearings for armatures on both Westinghouse and General Electric motors have been equipped with Alemite fittings. The company finds this not only a quick and positive way of lubricating the bearings, but it insures their being kept clean and free from dirt and water. The cost of equipping bearings with Alemite fittings is approximately 50 cents per bearing. This includes all labor and material.

In order to insure that the correct quantity of grease is used in bearings without wasting or skimping lubrication, the grease gun used by the Houston Electric Company is calibrated so as to show the quantity of lubricant to be put in the various size bearings. The company also finds that the use of this method of lubrication adds much to the life of the bearings.

Oil Lubrication of Railway Motor Gears and Pinions

SPLASH lubrication for the gears and pinions of railway motors is being tested out on a number of electric railway properties. The method used consists of installing a Rico oiler on top of the gear case and depending on this to drop sufficient oil to keep the gears and pinions properly lubricated. One of these test installations is one motor of car 319 of the New York Railways. This car has a two-motor equipment with Chillingworth seamless steel gear cases. Tool Steel Gear & Pinion Company's gears and General Electric pinions are used. The ratio is 16:69 and the face of the gear and pinion is 5 in. One motor has been equipped with the Rico oiler, while the other uses regular gear lubrication.

The oiler is located so that the oil drops at approximately the pitch line where the gear and pinion mesh. The oiler is bolted to a wooden saddle, which in turn is bolted to the gear case. Two wire straps have been added around the oiler as a safety precaution.

The oiler was installed on this car June 26, 1924, and after a year and four months service the oil consumption has been 41¼ gills. Standard grades of car oil have been used throughout the test for lubrication. The cost of the lubricant per 1,000 motor-miles is 1.4 cents. A 5-gill oiler is used and oil has been added on the regular inspection basis used by the New York Railways. The practice of the company in regard to gear lubrication is to use 3 lb. of gear lubricant per car every 8,000 miles. With an average cost of 4½ cents per pound of gear lubricant, this method of lubrication would cost 1.7 cents per 1,000 car-miles or 0.85 cents per 1,000 motor-miles, where the cars have two-motor equipment.

The residue from the oil-lubricated gears which was retained at the bottom of the case has been removed twice during the test. This has amounted to about 8 or 9 gills. The gears and pinions were not new when the oiler was installed, but were in good condition. There has been no attempt to obtain accurate measurement as to the wear which has taken place, as the test was primarily to determine whether or not oil could be applied satisfactorily in this manner and whether the quantity of oil so delivered could form a protective film on the gear teeth. On several occasions, when the gear case has been removed, the gears and pinions have had a good covering of clean oil. No excessive wear has been apparent.

Motor Truck with Oiler Applied to Gear Case

Close-up View Showing Method of Installing Oiler for Gear and Pinion Lubrication

Testing Hot Water Heaters Good Insurance Policy

ANNUAL hydrostatic tests of the hot water heating systems of interurban cars are a part of the regular maintenance program of the Indiana, Columbus & Eastern Traction Company, Springfield, Ohio. Each fall, as the hot water heating system is connected up and filled, making ready for the winter service, a connection with the system is made at some convenient point and a hydrostatic test up to 300 lb. is applied. It is necessary, while making this test, to block off the pressure gage and the safety valve except that these pieces of equipment should not be taken off or the test finished until each has had an adequate test to see whether it functions properly.

The old type of safety valve has also been removed on most of the heaters and a type installed that has a handle allowing the valve to be operated mechanically. The checking of the operation of the safety valve is a part of the regular inspection of the cars. This avoids the possibility of the safety valve becoming stuck and inoperative through the action of corrosion or rust.

The direct reason that caused the test to be adopted on this property and others that were affiliated with it was an accident on the Youngstown & Suburban about three years ago. On a medium-sized car of this property there was a hot water system that by chance had been examined by the master mechanic as it left the station about 5:30 o'clock one January evening. The operation was normal, there being a pressure of about 5 lb. registered. Ten minutes later an explosion occurred, bursting the cast-iron water reservoir in such a violent manner that the entire front end of the car was blown out. A large hole was ripped

in the roof of the car over the heater. The most serious damage, however, was caused by the shattering of two plate-glass partitions, one between the baggage and the smoking compartment and the other between the smoking compartment and the main compartment. The flying glass severely cut a number of people, twelve being taken to the hospital. It has taken three years and a large sum of money to discharge claims arising from this unfortunate accident.

Profiler Used to Surface Bearings

BEARINGS are surfaced, keyways are cut and oil grooves are made in the bearings by means of a profiler at the Albany Street shops of the Boston Elevated Railway. It is thought that the greater weight at one end of a bearing tends to result in more metal being cut away when surfacing is done on an ordinary grinder. This difficulty is avoided when a profiler is used, and the work done is considered to be more accurate. Moreover, a greater amount of work can be done in a given time on the profiler.

New Equipment Available

Another Manufacturer of Gas-Electric Buses

PASSENGER comfort, contained in easy riding qualities and body interior appointments combined with smooth acceleration, and economical maintenance are some of the features claimed for the gas-electric drive bus recently developed by the Cummings Car & Coach Company, Chicago, Ill.

The electric drive is similar to that employed on the Philadelphia gas-electric and the Albany buses. Detailed information regarding this drive has been given in previous issues of this paper. In the Cummings bus, power is furnished by a six-cylinder, 4½ x 5¾-in. Continental engine, coupled by means of two universal joints and a short propeller shaft to a General Electric separately-excited generator. This is rated at approximately 25 kw. Two 20-hp. motors are electrically connected through a controller box to the generator. The motors in turn

Twenty-nine Passenger Gas-Electric Drive Bus of the Cummings Car & Coach Company

drive the rear wheels through two worm units with gear reduction of 11 to 1. With this drive, a speed of approximately 30 m.p.h. is obtained with an engine speed of 1,800 r.p.m. Acceleration compares favorably with other gas-electric buses, being approximately 1.5 m.p.h.p.s. up to 26 m.p.h.

Features of the chassis construction include four-wheel Christensen air brakes, those on the rear wheels being built integral with the drop-forged double banjo Timken rear axle housing. A somewhat heavier frame than used in standard practice is employed, and heavily gusseted channel cross-members are used. It is claimed that it is entirely rigid.

Pleasing body lines are also a feature. The wide letterboard above the single sash windows serves to make the bus look smaller than it is. A combination visor and destination sign is mounted above the two-section divided windshield.

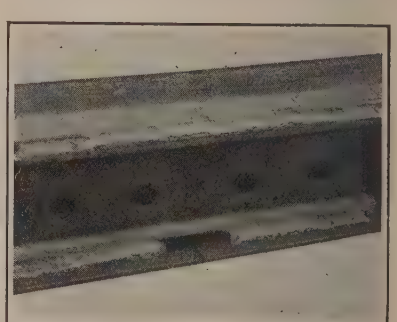
Interior finish is of mahogany. A narrow side post, combined with brass sash, gives a minimum obstruction to vision. Seats for 29 passengers are provided on black leather fully upholstered Hale & Kilburn seats. The rear seat extends across the bus.

With an outside over-all width of 94 in. an aisle of approximately 20 in. is provided. A white Haskelite headlining covers the interior of the roof. Entrance is gained by a single step well which is closed by a jack-knife door, hand operated by a lever mounted on the steering column below the wheel.

Illumination is furnished by eight flat bowl fixtures covering 21-cp. lamps. The exhaust furnishes heat and ventilation is obtained by means of four Keystone type ventilators. The entire bus weighs approximately 14,500 lb. light and is listed at approximately $11,000.

Improved Joint Construction

RECENT improvements in welded joint construction which are recommended by the Una Welding & Bonding Company consist of the use of rolled plates with Una joint welding. These plates have been designed for common sections of girder rail to combine large fishing area with the most economical distribution of metal. Bolts, bolt heads and nuts are so located that they are removed



Welded Joint Using Rolled Plates

from the point of welding. A ledge and groove are provided for welding the head seams which allow a large area of fusion for the seam metal. The base seams are also easily welded and many tests have demonstrated the advantages of this type of plate. Rolled plates of suitable design for seam welding are furnished for common sections of girder rail by the Bethlehem Steel Company and the Rail Joint Company.

The News of the Industry

Dayton Case Decided

Court Holds Ordinance Invalid Under Which It Was Sought to Prevent Use of One-Man Cars

The ordinance is invalid which was enacted by the city of Dayton, Ohio, on Nov. 6, 1923, prohibiting the city street railway companies from operating one-man cars. Under a prior ordinance enacted on Dec. 14, 1921, the companies were specifically authorized to operate one-man cars and the type and use of the cars were regulated. The opinion in the case was rendered by United States District Judge Smith Hickenlooper at Cincinnati, Ohio, and was filed by him in the United States court at Dayton on Dec. 7. The suit was entitled City Railway, Dayton, vs. City of Dayton, et al.

The ordinance is held to be invalid on two grounds in particular. The first, that it impaired the obligation of the contract created by the acceptance by the railways of the conditions of the December, 1921, ordinance and, second, that it was not a lawful or reasonable exercise of the police power.

On the matter of whether the ordinance was properly initiated, the court says it is not necessary to pass upon that question, since it has become moot, but it is stated to be the court's opinion that if there were irregularities, where an election was ordered and held, without objection, attack cannot be subsequently and collaterally made.

The opinion of the court covers thirteen typewritten pages. After a review of the case, the questions presented are discussed. In conclusion, Judge Hickenlooper writes:

> These regulations which directly tend to the elimination of accidents and are manifestly enacted for such purpose will receive the hearty approval of the court if within the municipal power of the city. In the instant case, however, we are constrained to hold not only that the ordinance of Nov. 6, 1923, impaired the obligation of a contract created by the acceptance of the condition of the ordinance of Dec. 14, 1921, but that its purpose was simply to provide employment for a larger number of operatives, and that even if it were considered as having some slight connection with the public safety, such connection is too remote to consider the ordinance to be a reasonable exercise of the police power. We have pointed out that the reasonable method of accomplishing the desired result along this line was by the passage of ordinances specifically prohibiting operation under the unsafe conditions complained of.

Under these circumstances the court said it became unnecessary to consider the validity of the ordinance as an imperfect exercise of the right of initiation. Upon this point the court expresses this definite opinion:

> Such consideration as we have given to the matter would incline the court to the opinion that, when the petition papers were once certified to the commission as sufficient in form and number of petitioners, and an election was ordered and held upon such certification and without objection then or theretofore lodged with the commission by the opponents, the proceedings cannot be subsequently and collaterally attacked by reason of such prior irregularities.

The court was aware that this view is directly contrary to that taken by the Supreme Court of Oregon. For this reason it was unwilling authoritatively to pass upon the moot question. This disinclination on its part was further emphasized by the fact that it construed the provision of Section 21 of the charter, requiring the petition to be signed by an additional 15 per cent of the electors, to mean that such additional signatures were to be of registered voters. The court said:

> This requirement clearly was not complied with, although apparently complied with at the time the petitions were first checked and certified. We hesitate to hold that an expressed charter provision may be thus disregarded with impunity, provided it be not immediately discovered.
>
> On the other hand, in the views here expressed upon the charter provision question, we are inferentially supported by the Ohio State constitutional provisions relative to initiative proceedings in the absence of special charter provision, but for the reasons stated we made no definite finding of law upon this issue, although our finding of fact is that the procedure prescribed by the Dayton charter was not complied with as to either the initial or the final initiative petitions.
>
> The interlocutory injunctions must be made permanent.

Eight-Cent Cash Fare in Rochester

Demand Based on Report of City Railway Commissioner—Recapitulation of Five Years Service-at-Cost-Operation—Advances Ahead in Syracuse and Utica

THE New York State Railways has served formal notice on Mayor Van Zandt and the Common Council that an 8-cent fare will go into effect on its Rochester lines on Jan. 1. The present fare is 7 cents.

The railways' demand is based largely on the report of City Railways Commissioner Charles R. Barnes for the year ended July 31, 1925, under the service-at-cost contract between the traction company and the city. In this report Commissioner Barnes stressed the inadequacy of the 7-cent fare and pointed out a deficit of $326,231 under the fare determining balancing account, the highest of any year of the five under which the service-at-cost contract has operated.

The actual deficit for the year, the report shows, was $94,735. The commissioner reported trolleys, trackless trolleys and buses carried 97,832,597 passengers for the year, approximately 2,400,000 under the total of the previous year and 5,000,000 less than for the similar period in 1922-1923.

Of the total deficit of $94,735 for the fifth year under the contract, $17,648 is charged to the operation of trackless trolleys and buses by the railway company.

Mr. Barnes cites the great drains on revenues made in carrying out street improvements and in improved equipment. Revenues for the year were $5,079,610, with operating costs at $5,174,345.

The base valuation, now subject of a suit instituted by the city which seeks a reappraisal, is shown to have increased from $19,216,000 to $19,661,644 through replacements and investment in bus lines. The contract allows the railways a return of 6 per cent on this valuation. Never during the five years

FIGURES OF FIVE YEARS SERVICE-AT-COST OPERATION IN ROCHESTER

ASSET SIDE

Base value:		
Railway property	$19,509,722	
Bus lines	151,921	$19,661,644
Fund accounts:		
Renewal and depreciation fund	$105,642	
Fund for other operating reserves	21,545	
Fund for other obligations incurred and unpaid	341,898	
	$469,085	
Less balancing account deficiency	326,231	142,854
Miscellaneous accounts receivable		40,311
Operating deficit		326,231
Total, asset side		$20,171,040

LIABILITY SIDE

Base value investment:		
Railway property	$19,509,722	
Bus lines	151,921	$19,661,644
Current liabilities:		
Audited accounts and wages payable	$229,153	
Taxes accrued but not due	124,509	
Ticket liability	28,545	382,210
Reserves:		
Renewal and depreciation reserves	$105,642	
Other operating reserves	21,545	127,187
Total, liability side		$20,171,040

of the contract have the lines yielded the guaranteed return.

Mayor Van Zandt and other officials contend that the demand for an 8-cent fare is justified. Under the proposed advance, ten tickets, now sold for 65 cents, would cost riders 75 cents.

James F. Hamilton, president, discussing the company's action, said:

> My honest opinion is that eight or ten months of an 8-cent fare should wipe out the balancing account deficit and make a 7-cent fare again possible in Rochester.

The movement for a higher fare in Rochester will be followed by similar action in Utica and Syracuse, where the lines are also operated by the State Railways. In both these cities the increase must be approved by the State Public Service Commission. It is believed the company's application for a 10-cent cash and 7½-cent ticket fares in both cities will be submitted soon.

Both Utica and Syracuse lines have been the subjects of appraisals on which to base the petitions for fare advances. The Syracuse lines have been appraised at $21,012,000. The Utica appraisal is incomplete.

The balance sheet on page 1047 for the first half (five years) of the service-at-cost contract between the New York State Railways, Rochester Lines, and the city, covers operations to and including July 31, 1925, follows:

Railway By-Laws Defeated in Hamilton

Reports from Hamilton, Ont., show the defeat on Dec. 7 of both the railway by-laws. This was followed by an announcement that service would be discontinued on Dec. 10 by the Hamilton Street Railway. The figures show that 2,328 voted for the city to purchase the system, while 7,713 voted against the purchase. On the second by-law 7,627 voted for the agreement giving the company a 25-year franchise and 9,155 voted against the agreement. These figures are for 160 divisions.

On Dec. 9, at practically the last moment before the suspension was to become effective, the company agreed to accept the city's proposal to renegotiate for a new agreement to be submitted to the voters by Feb. 11.

The issue in Hamilton was referred to in the ELECTRIC RAILWAY JOURNAL issue of Nov. 28, page 969.

New York City May Have to Quit Municipal Operation

Operation of the Staten Island-Midland trolley system and the Williamsburg Bridge line by the city of New York must be discontinued, it was announced on Dec. 4 by William Wirt Mills, Commissioner of the Department of Plant and Structures, unless the Board of Estimate appropriates funds to meet the deficits of the lines, on which, he said, the employees need now to be paid from city funds.

Mr. Mills sought an immediate appropriation for the payroll but because Controller Charles Craig refused to join with the other members of the Board of Estimate in a unanimous vote, necessary to make an appropriation at the first request, the petition was laid over until Dec. 11. Mr. Mills said that meanwhile he would have to seek funds elsewhere.

Transportation Problem in New Jersey Discussed

Thomas N. McCarter, president of the Public Service Corporation of New Jersey, has sent a letter to stockholders of the corporation and its subsidiaries in which he says co-ordination of bus and street car operation is a solution for the company's traction problems.

Mr. McCarter says the demand for transit service is growing. The volume of traffic handled by Public Service in 1924 was the largest in its history. That for 1925 will be even greater. In the interest of the public and of further civic and industrial development, nothing is more urgently needed, according to Mr. McCarter, than the expansion and improvement of the transportation system which Public Service operates.

He says such expansion and improvement is impossible under existing circumstances, for, while the financial condition of Public Service Electric & Gas Company and Public Service Production Company is such as to insure the prosperity of Public Service Corporation, that of both Public Service Railway and Public Service Transportation Company is, unsatisfactory. He says:

> Not only are both companies not receiving an adequate return, but both are conducting transportation at a loss, which under the economic law is indefensible and cannot go on indefinitely.

Parenthetically it should be mentioned that the corporation operates street cars through the Public Service Railway and buses through the Public Service Transportation Company. Both companies are operating on a base 5-cent fare. In the case of the railway, this rate was adopted at the suggestion of the State Board of Public Utility Commissioners. It was urged as a step toward co-ordination of street cars and buses, as a convenience to the public and an advantage to the municipalities and a benefit to every one. Mr. McCarter says:

> It has been and is now the desire of Public Service to retain, if possible, this 5-cent base fare. The management of the two companies have been making every effort to provide economies and attain efficiency in operation, which would bring the cost of service within the revenue the present fare produces.

Elimination of street congestion and relief from paving charges were recommended by Mr. McCarter. Of paving charges he says:

> These obligations came into being at a time when horses drawing street cars wore out paving and are now without justification, since the present method of operation imposes no burden on the pavement. Pavement does not benefit the car rider and the cars do not wear it out.

The car company collects about 420,000,000 fares a year and the bus company about 135,000,000 fares in serving 158 municipalities.

Court Sustains Injunction Against Council Bluffs

The United States Circuit Court of Appeals has affirmed the injunction granted by the United States District Court restraining the city of Council Bluffs, Ia., from interfering with a fare increase to 7 cents or four tickets for a quarter charged by the Omaha & Council Bluffs Street Railway.

The injunction was granted in July, 1924, on the application of the company. Application had previously been made to the City Council for permission to increase the fare, but as the City Council failed to act and as the situation was urgent, the company's attorneys took the matter into the Federal Court. The decree just handed down does not finally dispose of the matter, as the case will now be tried on the merits of the fare increase. It was stated in the ELECTRIC RAILWAY JOURNAL, issue of July 19, 1924, page 101, that, figuring a 7 per cent return on invested capital, the company claimed it had sustained the following deficits in earned income: 1921, $206,366; 1922, $168,444, and 1923, $178,441.

In Omaha a 10-cent cash fare was authorized on June 10, 1925.

Columbia Property Refuses to Operate for Any Definite Period

The refusal of the Columbia Railway, Gas & Electric Company to enter into a contract with the Columbia, S. C., City Council to operate the street cars in that city until 1927 apparently makes certain the abandonment of the service in this city at an early date. The railway has notified the City Council that it cannot enter into a contract to continue service for any definite period of time and the City Council in return has decided that it cannot continue to offer certain measures of relief.

Some weeks ago the company notified the Council that it was losing from $6,000 to $8,000 monthly due to the fact that people had stopped patronizing its cars. A bus company was organized and announced that it was ready to begin operation provided that street cars were discontinued. A Chamber of Commerce committee sent a letter requesting the trolley company to discontinue the operation of its cars within 30 days or else enter into a new contract with the City Council. Whereupon the company notified the Council that it would suspend service on Dec. 1. Then came a flood of protests.

The South Carolina Railroad Commission, and the City Council then held conferences and proposed relief measures. The commission proposed a zoning system, with 5-cent fares in each zone; that certain double-track lines be removed and single-track used instead. This, it was held, would reduce tax assessments. The City Council proposed to pass an ordinance regulating the competition of 10-cent jitneys and proposed to reduce the paving assessments of the company and also to approach the State Tax Commission on the matter of having the company's taxes reduced, but before the Council definitely decided what it would do, it wanted some sort of assurance of an improvement of service and an agreement that the company would continue operation until January, 1927.

R. L. Peterman, vice-president of the railway company, in his letter to the City Council says in part:

> If the operating loss continues the railway system will, of necessity cease to operate. We have endeavored through the strictest economy, together with the elimination of some of the most unprofitable lines, to make the system pay at least its operating expenses and taxes, but in spite of our efforts the operating loss continues.

The cars charge a 7-cent fare with 3 cents for transfers.

Subway Extension in Cincinnati Requires Funds

Submission of a bond issue to extend the rapid transit subway at Cincinnati, Ohio, into the very heart of the city is being considered by the Rapid Transit Commission. A tentative estimate made by Frank Rashig, engineer in charge of construction, more than a year ago, placed the cost of the proposed extension at $1,500,000, but that figure now is deemed inadequate because of higher cost of material and labor. This extension would bring the downtown terminus in close proximity to the Dixie Terminal, used by the Cincinnati, Newport & Covington Railway.

When representatives of the Cincinnati Street Railway made a survey of the subway several months ago, they pointed out that the subway as now completed would not be practical for operation unless the extension was constructed.

Mr. Rashig informed the commission that the subway will be ready for the laying of tracks as far as Norwood next spring, but that the extension in Oakley cannot be made unless additional funds are provided. It was announced that as soon as the subway was ready for operation the street railway would operate buses as feeders for the system.

Fare Issue in Spokane Pending

The proposed increase in fares charged by the Spokane United Railways, Spokane, Wash., is still pending following an adverse report made by Mayor Fleming and Corporation Counsel Geraghty to the City Council at an open meeting some weeks ago. The United Railways officials presented further facts in their appeal for a 10-cent cash and 7.69-cent ticket rate, but the Council took no action as a body. It is understood that another conference between the company and city officials will be held shortly. However, any action of the City Council would be simply advisory as a change in the rate tariff would have to be filed with and approved by the State Department of Public Works before going into effect. The present rate is 7 cents cash with a 6-cent ticket rate. The petition of the company was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 31, page 797.

Morris County and Public Service Reach Operating Agreement

An operating agreement between the Morris County Traction Company and the Public Service Railway, Newark, N. J., was reached recently whereby through transportation service is provided over the lines of the two companies. Formerly, passengers were required to transfer at the junction point of the lines, but under the new agreement cars are being operated direct to the Public Service terminal in Newark, thus obviating considerable delay for the passengers.

Some misunderstanding of the exact relationship existing between the companies has arisen in the minds of Essex County authorities. As explained by O. G. Schultz, general manager of the Morris County company, each of the lines is entirely independent of the other. When a car of one company is operating over the line of the other it becomes the temporary responsibility of that company and the owner has no control over it. Thus any difficulties arising between the Essex County authorities and the Newark Public Service Company cannot possibly involve the Morris County Traction Company in any way. The Morris County line is in no sense an operating identity in Newark.

The discussion in the township of Union as to whether bus service will be substituted for trolley service by the Morris County company is rapidly coming to a head. Many interests in Union oppose a cessation of trolley operation, but the bus is not without its advocates. Whatever the decision in the matter may be, there is no intention of removing the tracks in Union, for the present at least.

Wages Up on Key System

Carmen of the East Bay cities in California have been awarded an increase in pay and the eight-hour day with time and a half for overtime. The arbitration board comprised John L. McNab, well-known San Francisco lawyer, chairman; Commissioner Frank Colbourn of Oakland and E. O. Edgerton, president of the East Bay Water Company of Oakland.

By the agreement reached by Mr. McNab and Mr. Colbourn but opposed by Mr. Edgerton the pay of the men on the Key System Transit Company is increased from 58 to 75 cents an hour on the Key division and from 56 to 70 cents an hour on the traction division. The basic eight-hour day is to be spread over not more than thirteen hours. The new scales will take effect Jan. 1.

News Notes

Seeks Higher Fare. — The Southern Colorado Power Company claims that the fare in Pueblo, Col., which has been 6 cents for the past five years, is inadequate. The company has requested the City Council to allow an 8-cent rate.

U. S. Pays for Mail Transportation. —The Post Office Department paid $619,201 for the transportation of mail by electric railway during the fiscal year ended June 30, 1925. The length of the lines over which the mails were carried is 8,042 miles.

Increase Withdrawn.—By special permission of the Public Service Commission the proposed increase of 15 per cent in prices of 50-trip commutation tickets for transportation between points on the Oneida line, South Utica and Syracuse (city line) inclusive, of the New York State Railways is withdrawn, effective on Dec. 1. Tickets will be sold at the prices heretofore in effect.

Change in Fares. — Announcement has been made by the Poughkeepsie & Wappingers Falls Railway, Poughkeepsie, N. Y., that a change in the commutation rates from Poughkeepsie, Kingwood Park and Wappingers Falls provides for the issuance of commutation tickets good for 52 rides monthly between Poughkeepsie and Kingwood Park for $7.80 and between Kingwood Park and Wappingers Falls for $5.20. The company also announced that a pro rata refund on books already sold for December would be made.

Will Draft New Plan. — The City Council sub-committee on local transportation of Chicago, Ill., voted recently to draft a new ordinance looking toward any legislative action which might be needed to allow it to go into effect. The committee was appointed to study the traction situation and take steps to meet the franchise problem. This action was taken after traction officials invited to attend the meeting and discuss the situation with the Councilmen failed to appear. Leonard A. Busby of the board of management of the Chicago Surface Lines sent word that he would be glad to appear when the Councilmen had something concrete to offer. Samuel A. Insull, chairman of the Chicago Elevated Lines, and Henry A. Blair, president of the Chicago Surface Lines, both were out of town.

Service Restored in Lincoln. — Lincoln, Ill., which has been without street car service since Sept. 1, when the Lincoln Municipal Street Railway was abandoned, has accepted terms of the Lincoln Water & Light Company to operate the traction system. The company was granted a five-year franchise at $1 annually with a clause providing for cancellation of the franchise by either party on six months notice. Fare schedules will be adjusted later.

Cannot Arbitrarily Lower Fares.— The Board of Public Utility Commissioners has informed Mayor Frederick W. Donnelly of Trenton, N. J., that under present conditions it cannot lawfully require the Trenton & Mercer County Traction Corporation to establish a basic fare of 5 cents in Trenton instead of 8 cents. This was the board's answer to the request of Mayor Donnelly for a reduction in trolley fares. The board held that the traction company's earnings were approximately 5 per cent. Secretary Alfred N. Barber of the commission said that the board could not arbitrarily order a public utility to decrease its charges. He pointed out that the Supreme Court of the United States had decided that a rate fixed by a rate-making board which deprives a public utility of a reasonable return on the fair value of its property is unlawful.

Champions Street Railways. — The electrification of Maine railroads was visualized recently by Edward G. Buckland, vice-president and general counsel of the New York, New Haven & Hartford Railroad, addressing the Economic Club of Portland, Me. He said this would be brought about through the cheap and easily obtainable power from the waterways of Maine and from the development of the Passamaquoddy Bay project. He said that the place of street railways had altered since the advent of highway transportation, but it was generally conceded that in cities

of substantial size there was no other way so economical as the street railway in handling large crowds at peak hours.

Group Insurance for Employees. — Co-operation between the management and working personnel of the Trenton & Mercer County Traction Company of Trenton, N. J., has resulted in the adoption of a group insurance program providing more than $300,000 protection for practically all of the 320 employees eligible to participate.

Foreign News

Fare Reduction Causes Loss.—The reduction in tramway fares in Salford, England, last July has resulted in a loss at the rate of over £25,000 a year, according to an announcement made recently at a meeting of the Salford Town Council.

Bournemouth to Improve Tramways. —Expenditures amounting to nearly £100,000 have been authorized by the Town Council of Bournemouth, England, for new tramcars, reconstruction of tracks and other improvements. Bids for twenty new cars have been accepted.

Italy's Electrification Progress. — Railroad electrification in Italy in the near future will probably be confined to portions of roads where electric power will make possible the handling of more traffic and to stretches of railroad with numerous tunnels or heavy grades, according to Henry C. McLean, United States Trade Commissioner at Rome. The electrification program adopted during the war, when coal prices were soaring, has been dropped for the present, it is reported.

New Electric Railway in Australia. —Construction of an electric railway from St. Leonard's to Eastwood has been approved by the New South Wales State Parliamentary works committee. The plan includes the construction of a bridge across Lane Cove River and an extension of the line to the Northern Suburbs Cemetery. The length of the new railway will be about 8½ miles and the estimated cost is £649,600.

Electric Railway for Bavarian Alps. —An electric railway is to be built to the summit of the Zugspitze, the highest mountain in Bavaria. The plans were prepared some time ago, but construction was held up because of the Bavarian government's stipulation that the promoters must have enough money at their disposal beforehand to complete the work. The necessary sum, 16,000,000 marks, was furnished by German firms and by a British concern.

Danish Railways and Bus Lines Representatives Confer. — Competition between bus routes and private railroads in Denmark has grown keener and keener during the past ten years. At a conference held recently by representatives of the bus routes, the private railroads and the state railroads it was revealed that there are at present in Denmark about 500 buses in operation, with a combined road service considerably in excess of twice the length of all Danish railroads.

Recent Bus Developments

Indiana Company Would Purchase Four Lines

The Indiana Service Corporation, Fort Wayne, Ind., filed two petitions with the Indiana Public Service Commission on Dec. 4 asking that body to approve contracts which it has made for the purchase of four bus lines. The same company joined with the Union Traction Company in a petition for permission to buy and run the property of the Intercity Safety Coach Company, operating from Fort Wayne to Indianapolis, via Peru. These petitions were interpreted as following the course taken by other Insull companies in cases of competition with bus lines.

In one petition the company asks the approval of a contract by which it will pay $21,106 for the equipment and commission certificate from Crawford & Son, operating a bus line between Fort Wayne and Warsaw. Of the purchase price, $10,460 represents the value of the equipment. In the other petition the company seeks to buy three bus lines from John Donizelli. The total purchase price in this transaction is $107,500, of which $90,000 represents equipment, including eight buses. The lines involved in this petition are Fort Wayne to Marion, by way of Montpelier and Bluffton; Fort Wayne to South Bend, by way of Goshen, Elkhart and Mishawaka, and Fort Wayne to Muncie, by way of Bluffton and Hartford City.

New Haven Railroad to Use Bus Extensively

Petitions presented on Dec. 3 before the Connecticut Public Utilities Commission by the New York, New Haven & Hartford Railroad outlined an extension of its bus system between New York, Bridgeport, New Haven, Meriden, Hartford and Worcester to Boston.

Statements made by company officials indicate that the railroad plans a transportation system for the heart of New England as important and comprehensive as the New Haven steam railroad system, which it will parallel and with which the railroad officials say it will co-operate, making the existing steam railroad lines generally express train routes, with few stops, and leaving the trolleys and the buses to pass the doors of travelers, pick them up and take them for short distances. The buses would act as feeders for the steam lines, which are being electrified, and would, it is presumed, be tied in with the electric railways to be returned to the railroad under the recent decree of the federal court amending the dissolution ruling rendered in 1914.

Conference on Bus Legislation Called in California

President Harley W. Brundige of the California Railroad Commission has called a conference of those interested in bus and truck transportation, to be held at the office of the Railroad Commission in San Francisco Dec. 12 to consider matters of regulation.

During the last session of the State Legislature many bills were introduced to amend and clarify the auto stage and truck transportation act and most of them were submitted by their proponents to the commission for criticism and support.

The commission at that time announced its continued determination not to attempt in any way to influence the legislative policy regarding the regulation of this form of transportation, but merely to help in all ways within its capacity to clarify and render practical the operation of the law as determined by the Legislature. In furtherance of this, it suggested that all measures be dropped for the time being with the understanding that the commission would call together all interested parties to make a thorough study of the situation for comprehensive and unified recommendations to the next Legislature.

Because important cases were pending in the Supreme Court the calling of the conference was delayed. Decisions recently rendered in these cases, it is believed, will simplify the work to be undertaken.

Buses for Westchester Urged

Cross-country bus lines are vitally necessary in transit facilities in Westchester, N. Y., according to Leverett S. Miller, president of the New York, Westchester & Boston Railroad. Mr. Miller said that these cross-country lines would "traverse the untenanted spaces, east to west, throwing them open to settlement by commuters, stimulating the intensive development of the entire county and providing for the new population a rapid outlet to the main arteries of rapid transit, the railways." He said Westchester needed a system of comparatively small units welded together under one responsibility to guarantee the system permanence and stability, assure its conduct in the best interests of the public and constitute a central administration with which authorities of the various communities could negotiate. The bus came nearest to meeting the specifications for Westchester's transit development and was especially well suited to that section's needs.

Boise Studies Bus Applications

Two applications have been presented to the City Council of Boise, Idaho, for franchises to operate buses within the city limits which presage the abandonment of the city street car lines. One of these comes from W. E. Pierce, who is president of the Boise Street Car Company; the other is that of W. E. Young, Astoria, and the Linnton Transportation Company. Mr. Pierce's proposition is to connect buses with his present car system within the city and to abandon his car system if

it continues on a non-paying basis within six months, substituting buses. Under Mr. Young's application, it is proposed to install modern buses charging a 10-cent fare and operating on a regular schedule. At the present time there is pending before the federal court an application for a receiver to take over the Boise Valley interurban property. Reference was made to the possible receivership of the Boise Valley Traction Company in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 3, 1925, page 569.

Service Started.—The Augusta-Aiken Railway & Electric Corporation started bus service between Augusta, Ga., and Aiken, S. C., on Nov. 23.

Seeks Bus Permits.—The Worcester Consolidated Street Railway, Worcester, Mass., has applied to the Worcester license board for permission to operate buses in the Mill, June and Chandler Street districts of that city for the convenience of residents and school children.

Buses Replace Trolleys.—The Burlington County Transit Company, Burlington, N. J., has been granted permission by the Common Council of Burlington to use buses in place of trolley cars from Burlington to Mount Holly and Moorestown.

Buses as Experiment.—The Illinois Traction System has installed two buses on a route between St. Louis, Mo., and Edwardsville, Ill. The same fare as asked on its interurban line between those points is charged on the buses. They run on a 90-minute schedule between 6 a.m. and 11 p.m. daily. The service is in the nature of an experiment. For the present the railway schedules will remain unchanged.

System Grows.—Two bus lines have been added to the rapidly growing system in western New York controlled by the New York State Railways through the approval of transfer of certificates by the State Public Service Commission to the Ontario Motor Lines, controlled by the traction company. The transfers are that of the Rochester-Holcomb line of Joseph H. Berle and the Canandaigua-Penn Yan line from Frank Jones and William Leach. The New York State Railways now operates lines covering both these routes.

Auxiliary Service Sanctioned.—The Denver & Interurban Railroad, operating between Denver and Boulder, Col., placed in service Dec. 1 four buses, each seating 30 passengers. These buses will make six round trips every day, and with the railway cars making thirteen and the Colorado & Southern Railroad running two or more trains each day the section will be served with nineteen round trips daily. The officials of the Denver & Interurban were authorized by the Public Utilities Commission to try out the bus as an auxiliary. The automobile had made such inroads into the railway revenue that it was either the bus as a "helper" or a curtailment of car service between the cities of Denver and Boulder. Tickets purchased for the railway line will be honored by the buses, and vice versa.

Bus Franchise Acquired.—The United Electric Railways, Providence, R. I., has recently acquired the property and franchise of the Arctic-Providence Bus Lines of Rhode Island. Authority has been granted by the Public Utilities Commission for the electric railway to operate the lines at once.

Improvements in Service Announced.—Extension of its Emerson Street bus line to Chili Avenue to connect with the West Avenue trolley line and the use of lighter buses on its Dewey Avenue feeder route are among plans announced by the Rochester lines of the New York State Railways. The plans have been approved by Charles R. Barnes, city street railway commissioner. The bus service extension is contingent upon success of efforts to have residents of Glide Street, which the proposed extension would traverse, abandon their petition to have the railways pay for new pavement. James F. Hamilton, president, announced at the same time that more frequent service with buses of a lighter type than the ones now in use would obtain on the Dewey line before Jan. 1.

Will Supply Bus Service.—Residents of the rapidly growing subdivision of Allendale, at the southeastern end of Kenosha, Wis., petitioned the City Council for transportation service to be furnished by the Wisconsin Gas & Electric Company by either its rail or bus facilities. The company agreed to establish bus service for a trial period of six weeks to determine its possibilities. If the experiment proves a success this line will be linked up with the Prairie Avenue bus line, which will give Allendale residents through bus service to the manufacturing section in the western part of the city.

Rights Sought in Staten Island.—The Richmond Light & Railroad Company, New York City, N. Y., recently announced it would ask the Board of Estimate for franchises to run buses at 8 cents over three routes now operated by the Tompkins Bus Corporation at a 10-cent fare. The railway will seek the franchises in the name of the Staten Island Coach Company and will give transfers between the buses and the five trolley lines it operates as well as between bus lines. The statement was made recently by Charles G. Banghart, vice-president of the railroad. The Tompkins Bus Corporation, three of whose lines the railroad would take over, obtained franchises last March for the operation of three routes at 5 cents, but on Nov. 20 last this company, disregarding its franchise, raised the fare to 10 cents. Borough President Lynch has deferred action to revoke the franchises. The routes desired by the railroad are from the St. George municipal ferry to Port Richmond and Brighton Heights, respectively, and from West Brighton to Elm Park.

Buys Bus Routes.—The Capital Traction Company, Washington, D. C., has purchased the bus line operating from the south side of the Treasury to the East and West Potomac Park golf courses and the sightseeing buses operated to Hains Point in the spring and summer months. Operation of the golf course buses by the traction company will start at once. There will be no change in the schedule of fares, which are fixed at 5 cents to or from the West Potomac course and 10 cents to or from the East Potomac course. The sightseeing route to Hains Point will not be operated until spring. These bus lines have been operated by S. G. Leoffler under a license from the office of public buildings and grounds and the transfer of ownership has been approved by that office. The purchase price was not disclosed.

Railway Complains of Bus Company.—Circuit Judge Crow at Belleville, Ill., has issued a temporary injunction restraining the Blue Goose Motor Bus Company from doing an intrastate business between Belleville and East St. Louis, Ill. The injunction is returnable at the January term of court. Complaint against the bus company was made by the East St. Louis & Suburban Railway, East St. Louis, Ill., with which it came into direct competition. It was contended the bus company had not obtained a certificate of convenience and necessity from the Illinois Commerce Commission. The bus company has been operating for about six weeks into St. Louis, Mo., via the municipal bridge. It will continue to do an interstate business only pending final decision in the injunction proceedings.

Chevy Chase Line a Success.—The Capital Traction Company, Washington, D. C., has completed plans for extending the route of its parlor car bus lines to Bradley Lane, which will carry the line through the principal residential street in Chevy Chase, Md., thus making the line an interstate operation. The line now runs from the Circle in Chevy Chase, a suburb, to the Capitol. The number of passengers carried on the parlor car buses, on which a fare of 25 cents is charged, has shown a progressive increase for each week since operations began on Sept. 15.

Railway Opposes Permit.—The St. Louis Board of Public Service has taken under advisement the application of the People's Motor Bus Company to extend its Grand Boulevard-Carondelet Park line southward into the territory now served by the Bellefontaine division of the United Railways and the Loughborough Avenue route of the St. Louis Bus Company, subsidiary of the United Railways. A public hearing on the application was held by the board on Dec. 1. The granting of the permit is opposed by the United Railways. Col. Albert T. Perkins, general manager for the receiver, contended that the district is now adequately served with transportation. Colonel Perkins told the board that receipts on the Bellefontaine line during the first ten months of 1925 were $42,714 less than for the similar period in 1924, while the slump on the Broadway line, which serves the lower stretches of the district, was $63,225. Richard Meade, president and general manager of the People's Bus Company, admitted that the proposed extension would compete with the street cars, but contended that many residents of Carondelet had asked for bus service.

Financial and Corporate

2,716,777,978 Passengers in New York City

Transit Commission Figures for Year Ended June 30 Show Interesting Comparisons

Combined traffic of the transit lines in New York City for the year ended June 30 was 2,716,777,978. The aggregate net corporate income of the companies, after allowance for excess maintenance charges, was $2,588,940. These figures represent a growth of 43,835,828 in the number of passengers carried in the year, or 1.64 per cent over the year preceding, and a gain in aggregate net corporate income of $644,742.

On the traffic side, of the grand total of passengers transported, 1,680,800,254, or 62 per cent, were carried on the rapid transit lines and 1,035,977,724, or 38 per cent, on the surface lines. Ten years ago, in 1915, the proportion of the total traffic carried on the rapid transit lines was 47 per cent, as against 53 per cent on the surface lines.

The total traffic carried by the rapid transit companies, that is, the Interborough and the New York Rapid Transit Corporation (the B.-M.T.), 1,680,800,254 passengers, as against 1,611,538,072 in 1924, was a gain of more than 4 per cent. The rate of increase, however, dropped, as the 1924 growth was more than 105,000,000 passengers. The New York Rapid Transit Corporation reported a total of 591,256,029 passengers, or 54,061,200 more than in the previous year, a gain of more than 10 per cent. The Interborough Rapid Transit Company carried 1,089,544,225 passengers upon its subway and elevated lines combined, or 15,200,982 more than in 1924. On its subway division alone the traffic was 736,820,672, an increase of 21,887,485, or about 3 per cent more than in 1924. On the elevated division this traffic was 352,723,553, a falling off of 6,686,503 passengers, or about 2 per cent.

The 1,035,977,724 passengers carried by surface lines in 1925 was a decrease of 25,426,354, or more than 2 per cent.

The decrease in surface traffic was greatest in Manhattan, where the falling off was 24,300,000 passengers, more than half, or about 12,500,000, on the lines of the New York Railways. The Third Avenue Railway system, operating in Manhattan, reported decreases in traffic of 6,600,000 passengers, and other Manhattan companies decreases of 5,200,000. In Brooklyn a decrease of 8,500,000 passengers was on lines of the Brooklyn City Railroad, due largely to reduction in surface line traffic, following the opening of the Fourteenth Street-Eastern subway. This decrease more than offset the gains made by the several B.-M.T. surface line companies and resulted in a net decrease for the borough of 3,680,329. The surface railways in the Borough of Queens showed a decrease of 826,983, while the Borough of Richmond showed a decrease of 450,227.

The only borough which showed a gain in surface traffic was the Bronx, with an increase of 3,800,000 passengers, or 3 per cent over the preceding year.

The surface line companies by boroughs had the following traffic:

	1925	1924
Manhattan	354,396,834	378,667,933
The Bronx	128,177,094	124,374,810
Brooklyn	475,964,483	479,644,812
Queens	58,149,148	58,976,131
Richmond	19,290,165	19,740,392
	1,035,977,724	1,061,404,078

The Hudson & Manhattan lines, the figures of which are not reported in the above totals, carried 107,900,000 passengers, an increase of 700,000. The Fifth Avenue Coach Company, with 67,700,000 passengers, showed an increase of 10,600,000, or 18 per cent. The commission has no official figures of the traffic on buses operated under municipal auspices and outside the law, but this traffic has been estimated to be about 40,000,000 passengers annually.

On the financial side, the rapid transit lines increased their net income, after allowance for excess maintenance, to $1,381,648. The surface line deficit was greater by $736,906 than the deficit of $189,759 reported for 1924. The New York Rapid Transit Corporation (B.-M.T.) showed a net income of $3,861,113, an increase of $1,368,131. The Interborough subway lines, with a net corporate income of $4,188,249, showed an increase of $828,989, but the deficit from operation of Interborough elevated lines more than absorbed all its subway profits. The elevated division deficits were $4,533,757, or $815,472 greater than in 1924. While the returns of elevated and subway traffic of the New York Rapid Transit Corporation were not submitted separately to the commission, it appears that a considerable proportion of the net income of that company was earned on its subway lines.

The street surface companies, in all boroughs as a whole, showed a deficit of $926,665, as against a deficit of $189,759 in 1924. The surface lines in Manhattan showed a deficit of $586,201, which was, however, less than that of 1924, which was $1,213,328. In the Bronx the surface road deficit increased from $177,703 in 1924 to $393,079 this year. In Brooklyn the surface roads, though their receipts fell off, still showed a net corporate income of $464,071. The net corporate income in 1924 for those lines was $1,775,377. The Borough of Queens showed a reduction in surface line deficit from $526,366 in 1924 to $237,612 in 1925. In Richmond Borough, on the contrary, the deficit grew from $47,737 in 1924 to $173,842 in 1925.

These figures are all based on compilations made by the Transit Commission's division of statistics from the reports of the companies for the fiscal year ended June 30, recently received. The results have since been issued by the commission in pamphlet form. The various lines covered include the subways, elevated railroads and surface (trolley) roads, but exclude the figures of the Hudson & Manhattan and the municipal operation over the Williamsburg Bridge.

Bonds of Philadelphia Companies Being Resold

Dillon, Read & Company, New York, and Biddle & Henry, Philadelphia, are offering publicly bonds of three separate issues of underlying properties of the Philadelphia Rapid Transit Company. These bonds have been purchased privately and do not represent new financing by the P. R. T. system. The offering consists of $500,000 of the Union Passenger Railway 4 per cent first (closed) mortgage bonds, dated March 21, 1981, extended from March 31, 1911, due March 31, 1961, priced at 77¾ and interest to yield over 5.40 per cent; $285,000 of Peoples Passenger Railway 4 per cent second (closed) mortgage bonds, dated July 15, 1981, extended from July 15, 1911, due July 15, 1961, priced at 76½ and interest to yield over 5.50 per cent, and $246,000 of Peoples Passenger Railway 4 per cent consolidated (closed) mortgage bonds, dated March 1, 1882, extended from March 1, 1912, due March 1, 1962, and priced at 74½ and interest to yield over 5.65 per cent.

Passenger Traffic Increased in October

There was a further increase in passenger traffic carried on electric railways during the month of October compared with October, 1924. The total number of revenue pasengers, including bus passengers, reported to the American Electric Railway Association by 207 companies for the two months was:

October, 1925	792,334,792
October, 1924	772,530,849
Increase	2.56 per cent

New Issue in New Jersey Quickly Taken by Customers

The Public Service Corporation, Newark, N. J., has disposed of practically all its recent issue of 115,500 shares of 6 per cent cumulative preferred stock. Holders of the 7 per cent and 8 per cent preferred were given the privilege of subscribing at $100 a share and accrued dividends in the proportion of one share of 6 per cent preferred for each four shares of the other two preferred stocks held as of Oct. 7. The portion not thus taken was offered by the corporation, beginning Nov. 1, under the customer-ownership plan.

Both offerings have been very successful. Up to Dec. 1, under a sales campaign conducted by employees, 18,878 shares of the 6 per cent preferred were sold at par to 4,632 subscribers, an average subscription of about four shares. This was accomplished in a 30-day month, with eight working days eliminated, including

Sundays and holidays. Compared with other months in previous stock-selling campaigns, the number of subscribers obtained in the November sale is unusually large.

It was decided to continue the campaign this month until 25,000 shares of the 6 per cent preferred issue had been sold on the customer-ownership basis. With this amount deducted from the total issue of 115,500 shares it is evident holders of the 7 per cent and 8 per cent preferred stocks subscribed for more than 90,000 shares of the original offerings.

More Passengers Being Carried in Cincinnati

Business is picking up for the Cincinnati Street Railway, Cincinnati, Ohio, since it took over the operation of the local system from the Cincinnati Traction Company a month ago, according to figures compiled by W. Jerome Kuertz, Director of Street Railroads. The daily number of revenue passengers transported during November was 8,550 more than in October. The actual figures for the two months showed 238,438 revenue passengers carried a day in November as compared to 229,848 a day in October. The increase is attributed largely to the lower rate of fare, but the growing tendency throughout the country, in view of traffic congestion, for citizens to turn to the electric railway is believed to be an important contributing factor.

Consolidation Prospects at Washington Brighter

It has become very evident that the prevailing official view is that city transportation in Washington, D. C., is a natural monopoly. The prospects of merging the railways of the Washington Railway & Electric Company and the Capitol Traction Company appear brighter than ever before and it is evident that long range planning has in mind the ultimate operation of street cars and buses under one management.

In the meantime much thinking is being done on plans for co-ordinating the street car and bus services. The city plan of the capital city is circular, with the Capitol forming the center. The right-angle street system is based on the projection of the axis of the Capitol. In addition there is an avenue system which provides broad diagonal thoroughfares throughout the entire District of Columbia. The rail lines in general have been located on the north and south and east and west streets rather than on the broad diagonal avenues.

The plan which is being worked out apparently has as its object the providing of express bus service on the avenues, on which a higher fare will be charged than is allowed on street cars. In fact, it looks as if two types of service by bus will be approved. One will be allowed to charge only a small amount in excess of the street car rate, while the other will be a parlor car service at a considerably higher rate.

The local commission is seeking a report on the prospects for a merger.

Ordinance Passed to Buy Seattle & Rainier Valley Line

Final steps leading to the purchase of the Seattle & Rainier Valley Railway by the city of Seattle, Wash., for the sum of $1,200,000 was recently taken when the Seattle City Council passed an ordinance offering this sum. Nothing remains to be done until the company accepts the offer, which it is said will be done within the 90-day limit set. Representatives of the bondholders have notified the City Council of their intention to accept the offer. It is expected that before next March municipal street cars will be running ou tthe Rainier Valley to Renton. The ordinance was approved by all but two members of the City Council, who wanted a referendum clause attached.

To pay for the road, revenue bonds, a fourth lien against the railway department, will be issued at 5 per cent, redeemable in twenty years. Preliminaries to the actual purchase have extended almost a year, with numerous public hearings held for discussions of valuations submitted by appraisers.

Comments Made on Valuation Case in New York State

The Council of Rochester, N. Y., will not accept the offer of the New York State Railways to compromise the city's suit for a reappraisal of the valuation of the railway's lines in Rochester under the service-at-cost contract, according to Aldermanic leaders. The offer of the railway to reduce the base valuation by $1,140,000, or from the original figure of $19,216,000 to $18,076,000, with an understanding that the revaluation suit be dropped, has been in the hands of the Council for several months.

It was stated that if the compromise offer were accepted the effect on the fare-determining balancing account would be insufficient to forestall the 8-cent fare demanded by the railway. The action of the city is to be guided largely on the annual report of Charles Barnes, Commissioner of Railways, to be submitted soon.

Reorganized Company Will Operate Barre-Montpelier Line

John J. Flynn, Burlington, Vt., recently acquired the real estate, poles and overhead of the Barre & Montpelier Traction & Power Company, Montpelier, Vt., for $20,000. His bid was $2,000 higher than the bid received from F. A. Jewett at the first auction held about a month ago. Mr. Jewett, who planned to junk the road and operate buses, took exception to the sale of the property to Mr. Flynn on 21 counts. The sale to Mr. Flynn was confirmed on Nov. 30 by Judge Frank D. Thompson of Barton, as master of chancery of the auction sale.

Mr. Flynn has been elected president of the reorganized company. The other officers elected are: Vice-president, Chauncey W. Brownell, Burlington; secretary and treasurer, Fred H. Andrus, Vergennes; H. D. Hendee and the officers compose the board of directors. The new company takes over the franchise of the Vergennes Power Company. Fifteen years ago authority was granted a company by this name to operate the railway. The concern was capitalized for $200,000, of which $25,000 was paid in, but its franchise was never used. The new organization has asked authority from the Public Service Commission for an additional issue of $50,000 and plans to operate the Barre-Montpelier line.

Key West Property to Pass to Engineers' Public Service

The Engineers' Public Service Company, Richmond, Va., is to acquire control of the Key West Electric Company. Under a plan approved by a majority of Key West stockholders they are to receive one-third of one share of 7 per cent preferred and one share of no-par common of Engineers' stock for each share of Key West common held.

There are 5,000 shares of Key West $100 par common outstanding, carried at a book value of $838,000, and 350,000 shares of 7 per cent preferred stock outstanding. The company provides all transit, power and light in Key West. It is managed by Stone & Webster. The Engineers' company was formed in June by Stone & Webster interests to acquire control of the Virginia Railway & Power Company and the Spottsylvania Power Company. The Virginia property is now known as the Virginia Electric & Power Company.

Separation of Lincoln Property Suggested

The Continental Gas & Electric Corporation has asked the State Railway Commission of Nebraska for authority to sell to the Lincoln Public Service Company, organized with $3,000,000 bonds and $3,500,000 stock, the gas and lighting plant of the Lincoln Gas & Electric Light Company and the lighting plant of the Lincoln Traction Company, both of which it recently purchased. This leaves the city plant, a small one, the only lighting competitor. The plan contemplates the operation of the street railway property of the traction company separately. On the set-up submitted it is expected the railway will earn about $25,000 a year above bond and other interest.

Antiquated Rolling Stock Holds Back Interurban

Franklin T. Miller, receiver of the Boston & Worcester Street Railway, Framingham, Mass., has offered his third report concerning the affairs of the railway, and it has been affirmed by Judge Carroll in the Supreme Court.

Mr. Miller's investigation has disclosed the expected fact that bus competition has affected the revenues of the line. The report shows that from July 1 to Sept. 30 gross fell off $20,000. The total receipts from all sources were $226,000. Operating expenses were $238,071. The astonishing falling off in passenger revenues, Mr. Miller charges, was due to the fact that there is one automobile for each family in

the State, to illegal competition of buses and to the use of antiquated railway cars.

He said, however, that there would be little wisdom in investing new capital to rehabilitate the company's property when the road was being bled by the unlawful competition of buses. He thought the property should be in the hands of the owners, who could engage in business which a receiver could not.

Seattle Setting Every Dollar Aside to Meet Bond Payment

The Seattle Municipal Railway will go on a warrant basis on Dec. 25. An interest and principal payment, totaling $1,200,000 on the $15,000,000 of bonds issued for the purchase of the railway from the Puget Sound Power & Light Company, the former owners, must be made on March 1, 1926, and earnings of the department must be set aside for that purpose. From now until Feb. 1, when payment must be delivered to the city's fiscal agent in New York, the revenue of the railway will be turned into the bond interest and redemption fund.

Stock of Connecticut Company to Be Returned to New Haven

It was decided definitely at a meeting of the trustees of the Connecticut Company at New Haven, Conn., on Dec. 5 that the $40,000,000 of stock of the company should be turned over to the New York, New Haven & Hartford Railroad as the corporation legally entitled to it. It was said that the return on the stock would be made soon, concluding the order of Judge D. J. Winslow of the United States District Court, modifying the decree of 1914.

When the federal court in 1914 separated the electric railway from the New Haven road the ownership of the stock was vested with the New England Steamship Company, a subsidiary of the New Haven. The date of the transfer was not announced.

Vacancies Filled.—A. B. Tenney, C. H. Tenney and E. M. Bradley have resigned from the board of directors of the Bristol & Plainfield Electric Company, Bristol, Conn. F. E. Bosson and William D. Holman have been elected directors to fill two of the vacancies. The Connecticut Light & Power Company recently acquired control of the Bristol company.

Kentucky Bonds Offered. — Halsey, Stuart & Company, New York, are offering at 98½ and interest yielding about 5.60 per cent $2,000,000 of Kentucky Utilities Company first mortgage 5½ per cent gold bonds, series F. The Kentucky Utilities Company, Somerset, Ky., recently acquired control of the Paducah Electric Company.

Will Vote on New Issue and Stock Increase. — The stockholders of the Eastern Texas Electric Company, Beaumont, Tex., will vote on Dec. 14 on increasing the authorized capital stock by 47,000 shares of common stock without par value and on authorizing the issue and sale of $3,500,000 of five-year 5½ per cent convertible gold coupon bonds dated Dec. 1, 1925, and due Dec. 1, 1930. This issue is to help finance the power construction program planned by the company. Henry T. Graham, secretary, under date of Nov. 27, says that during the present year the company has broadened the scope of its activities and strengthened its position by the acquisition of new properties, operating not only in territory contiguous to that now served by subsidiaries but also in other sections of the country.

Service Abandoned.—The Bloomington, Pontiac & Joliet Electric Railway suspended service recently under an order issued by the Illinois Commerce Commission. The road is 18 miles long and operates from Pontiac to Odell and Dwight, Ill. The line was purchased some years ago by the Public Service Company of Northern Illinois, one of the Insull properties of Chicago. This company petitioned for its abandonment.

Line Sold. — The Hocking-Sunday Creek Traction Company, operating between Athens and Nelsonville, Ohio, which has been in the hands of a receiver for months and out of operation for weeks, has been sold to E. B. Young, former general manager of the company, for $42,000. The bondholders purchased the railway through Mr. Young, who said that he would resume immediate operation of the system.

October Surplus $228,267.—The operating revenue of the Philadelphia Rapid Transit System, Philadelphia, Pa., for October was $4,526,035. Expenses and taxes were $3,219,962. Operating income was $1,306,074. The surplus was $228,267. The number of passengers carried for the month of October was 82,781,116. Of this number 81,378,213 rode on the surface, subway and elevated and 1,402,903 rode on buses.

Deficit in Oklahoma Reduced in October.—Receivers of the Oklahoma Railway, Oklahoma City, Okla., report a brighter outlook for the company as a result of the October revenue showing. Four thousand dollars was sliced off the 1925 deficit during that month. Total revenues for October were $159,216, a considerable gain over September and the summer months despite the fact that there was an increase in the operating expenses. This, however, was slight. October revenues seemingly justify the prediction of the receivers that better days are ahead for the Oklahoma Railway.

Will Redeem Bonds.—The bondholders' committee of the first consolidated mortgage 5 per cent bonds of the Alton, Granite & St. Louis Traction Company has notified holders of such bonds and certificates issued by the company that the East St. Louis & Suburban Railway, East St. Louis, Ill., has agreed to redeem these bonds within 30 days from Nov. 30 to 95 per cent of the par value of the bond and also $20 per bond to cover the expenses of the committee. The obligation to pay for the bonds will expire on Dec. 30, 1925. The committee requests such bondholders as have not already done so to deposit their bonds. There is $2,483,000 of the bonds outstanding. Interest has been in default since 1920.

Issue Oversubscribed. — The sale of the $1,000,000 of 7 per cent preferred stock of the Virginia Electric & Power Company, Richmond, Va., referred to in ELECTRIC RAILWAY JOURNAL, issue of Nov. 28, page 975, has been more than successful. The stock, which was placed on sale more especially for employees and customers of the company, was several times oversubscribed.

Power House Transfer Approved.—Conveyance by the Riverside Traction Company, Newark, N. J., of its interests in the Burlington, N. J., power station to the Public Service Electric & Gas Company has been approved by the Board of Public Utility Commissioners. The approval is contingent upon the payment of $340,000 to the West End Trust Company under a mortgage made by the Riverside Traction Company.

Income Higher.—The net income of the United Railways & Electric Company, Baltimore, Md., for the first ten months of 1925 was $704,735, compared with $669,028 for a similar period last year. Gross income for the ten months period this year was $13,760,296. This represented an increase of $101,255 over the year previous. In the ten months period of the current year the total number of passengers carried was 185,622,377, compared with 190,807,951 for a similar period of last year.

Losses Made Known at Hearing.—Operating figures submitted by the Wisconsin Traction, Light, Heat & Power Company before the Railroad Commission hearing in Appleton on the application of this company to abandon interurban service from Appleton, Neenah and Menasha brought out the fact that this line was not the only source of loss. While the Appleton-Kaukauna interurban line did a fair business during 1924, the first seven months of 1925 placed the company $24,135 behind on operating revenues. The same held true with the Appleton city line, with the first seven months of 1925 showing expenses topping revenues by $8,071. Revenues of all electric railway properties operated by this utility for 1924 were $182,453 and operating expenses $197,115. A bigger deficit is expected for 1925, as the first seven months already show expenses of $110,935, with only $86,800 in revenues.

First Excess Since Order Was Issued.—For the first time since Jan. 1 last, when the Wisconsin Railroad Commission issued an order requiring the Madison Railways to make monthly reports to the city and commission, the October report filed with the city shows an excess in gross passenger revenues of $362 compared to the average four-year period during a similar month. This is the first amount which can be credited to the $70,000 fund which it was estimated increased fares would bring in excess receipts needed to carry out the improvement program agreed upon by the railway, city and commission. Total revenue passengers carried during October number 501,440, against 572,565 for the average four-year period. Gross passenger revenues for October were $33,891, against $33,528 for the average four-year period and $27,305 for October of last year.

Book Reviews

Statistical Abstract of the United States, 1924

Published by the Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington. 47th Number. 824 pages. Purchasable through the Superintendent of Documents, Government Printing Office. $1 (paper covers).

As in previous years this publication was prepared in the Division of Statistical Research, of which E. Dana Durand is chief. It represents a digest of data collected by all statistical agencies of the national government, as well as those of many private agencies. The revision of the Statistical Abstract, begun in the 1922 issue and carried through in large part in 1923, has finally been completed in all sections of the book.

By various methods of condensation the number of pages has been greatly reduced. At the same time a material increase has been made in the total volume of statistical material presented. Important data on area and population, vital statistics, immigration and emigration, education, public lands, military affairs, government, state and local finances, money and banking, wealth, business finance, prices, wages, public service utilities, roads and vehicles, railways and express companies, shipping and foreign commerce, irrigation and drainage, farming, manufacturing, mining, and commercial and other statistics of the principal countries of the world constitute the bulk of the contents.

Principles of Electric Power Transmission and Distribution

By L. F. Woodruff. Published by John Wiley & Sons, New York. 340 pages. $4.

This book will meet the needs of the man who wants exact and authoritative information concerning the principles which must be observed in designing and operating long transmission lines in order that the desired results—a minimum over-all annual cost for the successful accomplishment of the project—will be attained. The prime object of the book is the presentation of the fundamental scientific principles involved in power transmission and the methods whereby they are made applicable to practical engineering problems. The secondary object is to impart the maximum practicable amount of information concerning present-day practice necessary to gain a thorough mastery of the fundamental principles.

P. R. T. Traveler

Issued by *Service Talks*, official publication of the Philadelphia Rapid Transit Company, Philadelphia, Pa., 1925. 76 pages. 10 cents.

Philadelphians and visitors to the city will never be at a loss to find their place of worship or their favorite movie theater if they have in their possession a copy of ths route guide, issued as of Oct. 15, 1925, by the Philadelphia Rapid Transit Company. The booklet, with its city map, principal streets, "owl" schedule and many other valuable pieces of information, is far more than just an ordinary guide. Some interesting history on the city of Philadelphia is inserted, with details on the development of the transit service. The guide explains the routes of the P. R. T. by trolley, subway-elevated and bus to the various hotels, office buildings, schools, local communities, suburbs and other points served by the company.

Power Plant Lubrication

By W. F. Osborne. Published by the McGraw-Hill Book Company, New York, 1925. 275 pages. $3.

This is a practical book for the power plant engineer, explaining the physical and chemical properties of lubricants, their action under changing influences of heat and pressure and the methods of determining their relative value. The book shows the practical application of lubricants to the principal types of power plant machinery and gives specifications and standard tests.

Labor Economics

Solomon Blum, professor of economics University of California. Published by Henry Holt & Company, New York, 1925. 579 pages. $4.

The origin and history of the labor movement and the broader aspects of the subject are discussed by an impartial student of economics. The doctrine of natural rights in its philosophic as well as economic relationship is considered, together with the meaning of freedom. The usual controversial issues on labor as an institution frequently judged by the lay mind are explained in lucid and persuasive terms. These stumbling blocks include the right to strike, the sympathetic strike, enforceability of agreements, the boycott, picketing and other debatable theories. In "Labor Economics" Professor Blum defines the specific forms of unionism and the benefits derived therefrom. After an explanation of the forms of this movement its tactics are described, such as collective bargaining and wage theories. Some 60 pages are devoted by the author to the wider program of the labor movement in this country and abroad, with some developments of this program, such as the Marxian position, syndicalism, guild socialism and the cooperative movement. On the estimation of all the theories Professor Blum says:

> We thus come to a conclusion which does not fit any planned theory of economic development, for society is a moving, ever-changing process, where old forms give place to new, now rapidly, now slowly. Relics of the past live on the future and new forms are ever being born. To the careful student, broad, general tendencies may be discernible and the future economist may be able to look back upon order where we find only chaos. But no system will ever be simple.

The bibliography for the writing of "Labor Economics" comprises about twelve pages. It proves the exhaustiveness of the writer's research and the fairmindedness of his investigations.

Railway Motor Cars

Issued by the library of the Bureau of Railway Economics. Revised to September, 1925. 68 pages.

The contents of this list of references includes an index of authors, an index of railroads, an index of types of cars and references chronologically arranged from 1879 to 1925.

Mundy's Earning Power of Railroads

Compiled and edited by Floyd W. Mundy. Published by James H. Oliphant & Company, 61 Broadway, New York, 1925. Twentieth issue. 516 pages.

Important statistics are presented relating to the earning power and securities of railroads in addition to the story of income account, operating expenses, operating ratio, fixed charges and guarantees with their relation to net income available for dividends. Tables covering 125 pages summarize railway returns and show the range of earnings of the railroads and their capitalization over a series of years. The presentation of the facts is so readable as to commend the work to investors and others interested in railroad securities.

Freight Terminals and Trains

By John A. Droege, general manager New York, New Haven & Hartford Railroad. New second edition. Published by the McGraw-Hill Book Company, New York, 1925. 567 pages. $6.

This book describes recently designed facilities and new developments and includes two new chapters on the progress made in the use of electricity in train propulsion and on the use of adaptations of the motor truck to supplement rail transportation. The book as a whole is a complete treatment of railroad freight problems for designing engineers, freight agents, yardmasters, and railroad mechanical departments.

Legislative Compendium for 1925

The Blue Book of the American Commonwealth. Edited by Barratt O'Hara and H. D. Clark. Published by Legislative Information Bureau, 74 West Washington Street, Chicago.

This book contains a synopsis of the state laws enacted in 1925 as they affect business. The material is arranged alphabetically by subjects with statutes grouped under them. The treatment is very brief and serves only as an index to state legislation. A list of members of state legislatures with home addresses is given.

Patents—Law and Practice. Trade Marks, Trade Names, Unfair Competition

Published by Richards & Geier, New York.

The first book mentioned is the third edition of the Richards & Geier treatise on patents. It contains an index on United States patents, foreign patents, information on the United States law and practice, a digest of practice in foreign countries, schedule of charges in the United States and for foreign patents. It is 56 pages.

The second book, "Trade Marks," is the fourth edition. The contents of 48 pages includes a history of trade marks in the United States and in foreign countries. Copies of both books are available for gratuitous distribution to interested readers.

Personal Items

Appleton Official Advanced

A. K. Ellis, Long with Wisconsin Traction, Light, Heat & Power Company, Made Vice-President

A. K. Ellis, general manager of the Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis., has been made vice-president of that company, together with the North American company's other subsidiaries in northern Wisconsin and in the upper peninsula of Michigan. Mr. Ellis succeeds S. B. Way of the Milwaukee Electric Railway & Light Company as vice-president, filling the vacancy left open when Mr. Way was selected to succeed the late John I. Beggs as president of the company. Mr. Ellis will remain secretary-treasurer of the company.

A. K. Ellis

Mr. Ellis' career in the utility business embraces 34 years, 28 of which have been spent in Appleton. His progress has been colorful and remarkable. He came to Appleton in 1897 as assistant to the superintendent of the then recently organized traction company and was promoted in 1899 to the post of superintendent of railway and power plants, from which office he was advanced to general superintendent in 1913.

He held that job until the North American Company acquired control of the property in 1923, when he was appointed general manager. Since that time this holding company has acquired numerous other properties in the territory, including the Badger Utility Company, Pulaski; Star Electric Company, New London; Weyauwega Electric Light Company, Weyauwega; Peninsular Power Company and Inter-City Bus Company, the operation of which has been entirely in his hands.

When Mr. Ellis was appointed general superintendent of the Appleton company in 1913 its properties were valued at $2,682,368, gross earnings $319,915, electric and gas customers 5,712. As of 1925 the valuation of the properties increased to $7,209,441, gross earnings jumped to $1,484,004 and the number of customers served rose to 18,386.

It was just twenty-seven years ago that Mr. Ellis equipped his first street car and then piloted it on its maiden trip between Appleton and Neenah.

C. I. Crippen Operating Manager for Stevens & Wood

C. I. Crippen has resigned as assistant to the vice-president and general manager of the Pennsylvania-Ohio Electric Company, Youngstown, Ohio, to accept the position of operating manager of Stevens & Wood, Inc., with headquarters in New York City. He will have charge of the operation of the public utilities managed by Stevens & Wood.

Mr. Crippen has been prominent in utility work and as a consulting engineer, in Youngstown and vicinity, for a period of about seventeen years. Previous to his appointment as assistant to the vice-president and general manager of the Pennsylvania-Ohio Electric Company, he was district manager for Dwight L. Robinson, with headquarters at Youngstown, Ohio. Before that he was senior partner in the firm of Crippen & Funk, Youngstown, Ohio, and, previous to that was manager of the power sales department of the Pennsylvania-Ohio Power & Light Company.

He is a graduate of the Case School of Applied Science, Cleveland, Ohio, class of 1906. In recent years he has been prominent in the local clubs and societies in Youngstown. He is now secretary of the Youngstown Engineers' Club.

W. H. Woodin Assumes an Additional Executive Post

William H. Woodin, president of the American Car & Foundry Company, New York, was honored with another important executive position on Dec. 3, when he was elected president of the American Locomotive Company. He succeeds his former close friend and business associate, the late Andrew Fletcher, in this post. The announcement evoked no expression of surprise, for the two companies have long operated in close harmony.

Mr. Woodin has been a director and member of the executive committee of the American Locomotive Company for years and is credited with being the largest individual stockholder in that company. He has been affiliated with the American Car & Foundry Company since its organization in 1899.

The industrial connections of Mr. Woodin are widespread. He is a director in many important transportation, manufacturing and financial concerns, such as Westinghouse Electric & Manufacturing Company, American Ship & Commerce Corporation, Canadian Car & Foundry Company, Cuba Railroad Company and American Exchange Securities Company. During the war he served as fuel administrator for New York State.

C. B. Keyes Succeeds Mr. Trawick

General Electric Man Long in Service Advanced to Railway District Manager at New York

Coincident with the retirement of S. W. Trawick as district manager of the central station and railway departments for the General Electric Company came the announcement of the appointment of C. B. Keyes to the latter post. Long in contact with the methods and policies of Mr. Trawick, as his assistant and co-worker, Mr. Keyes is highly qualified in every respect to assume his new responsibilities. He is an old General Electric man, one of the countless able executives who have risen from the ranks in that organization.

C. B. Keyes

In 1908 Mr. Keyes came to New York as a representative of the railway engineering department. He was singularly successful in this post, but in 1911 he forsook the purely technical work and became associated with Mr. Trawick in the railway sales department. Continuing to bend his talents to this end throughout the strenuous years which followed, he was considered one of the most able men in the organization. With the advancing years came a widened activity—assignments of increasing importance. The first of 1925 saw his rise to the post of assistant district manager of the railway department, in which office he remained during the present year, until he was asked to take Mr. Trawick's place at New York as manager.

Mr. Keyes entered the General Electric organization in 1899, when he enrolled in the test course, which even at that time was a standard for electrical engineering training. Upon the completion of this training he spent four or five years in construction work, operating out of the Schenectady plant. Later he was assigned to the railway engineering department and remained at Schenectady until ordered to the New York office.

Before obtaining a position with the General Electric Mr. Keyes attended Rose Polytechnic Institute in Terre Haute, Ind., from which institution he was graduated with a B. S. degree. He was born in August, 1877.

Changes in Bristol Company

Albert B. Tenney, president, and D. Edgar Manson, vice-president, have resigned these positions with the Bristol & Plainfield Electric Company, Bristol, Conn.

Col. William H. Putnam has been elected president, M. L. Tiffany continues as secretary-treasurer and George E. Cockings continues as general manager. The Connecticut Light & Power Company recently acquired control of the Bristol company, which operates the Bristol & Plainfield Tramway.

H. M. Gould to Continue in Railway Field

H. M. Gould, who resigned recently as assistant general manager of the Department of Street Railways at Detroit, Mich., operating the municipal railway, is now engaged in special work. His plans for the future are not fully made, but he expects to return to the operating or engineering end of electric railway work. Ever since he went to Detroit Mr. Gould has been more than busy, first helping to put in the new city lines, then assisting in rehabilitating the lines taken over from the Detroit United by the city and finally with many of the details of management of the system as it is constituted today. Mr. Gould's present affiliations do not call for him to put his entire time on them, so that he really is achieving a respite from his arduous duties of the past few years while he matures his plans for the future.

E. D. Nelson has resigned as master mechanic of the Oklahoma Union Railway, Tulsa, Okla., to accept the position of master mechanic of the Tulsa Street Railway. Mr. Nelson had been connected with the Oklahoma Union Railway since 1918. Prior to that time he had been employed for six years by the Wichita Railroad & Light Company of Wichita, Kan., filling many positions and severing his connections to join the Tulsa Street Railway in 1913. Four years later he resigned to become identified with the Walworth Manufacturing Company at Kewanee, Ill. In 1918 he returned to Tulsa.

Earle W. Hodges, for three years director of the Arkansas Public Service Information Bureau and editor of Arkansas *Utility News*, has resigned to become connected with the public relations department of Henry L. Doherty & Company. Mr. Hodges was born at Newark, Ark., and was reared at Salem, Faulkner County. He spent his early years in newspaper work in North Arkansas, and then engaged in similar work in St. Louis. He went to Little Rock in 1904 as state printing clerk. Later he was elected Secretary of State, in which post he served three consecutive terms. When the Arkansas Public Service Information Bureau was organized in May, 1922, Mr. Hodges was just finishing work on the Pacific Coast and was induced to become head of the state body.

W. J. Fillmore, for several years superintendent of the Elgin & Belvidere Electric Company at Marengo, Ill., has resigned to accept a similar post on the Northern States Power Company operating between Eau Claire and Chippewa Falls, Wis.

C. L. Wood and S. R. Hoover Advanced by Carnegie

Important changes in the executive personnel of the Carnegie Steel Company, Pittsburgh, Pa., were made with the appointment on Nov. 21 of C. L. Wood to be general manager of sales and of Samuel R. Hoover to be assistant general manager of sales in charge of the bureau of bars and hoops. Mr. Wood, who formerly held the office now filled by Mr. Hoover, takes the place left vacant by William G. Clyde when he became president of the company.

C. L. Wood

After taking up a course in mining engineering at the Ohio State University in the class of 1896, Mr. Wood entered the industrial field as a chemist with the Calumet Furnace Company in Chicago. Business troubles forced this company to suspend operations, and Mr. Wood then turned his energies toward mining engineering in the West.

In 1898 Mr. Wood became affiliated with the American Steel Hoop Company and was made manager of the order department when the company moved to New York. Upon its consolidation with the Carnegie Steel Company, and with the formation of the United States Steel Corporation, he was transferred to the sales department of the Carnegie Steel Company. A thorough knowledge of the bar and hoop business gained for him the appointment as aid to Mr. Clyde when the latter became assistant general manager of sales.

Mr. Hoover entered the iron and steel business in 1898 with the Mahoning Valley Iron Company at Youngstown, Ohio. He was a mill worker and later became attached to the general offices of that company as an inspector. In the spring of 1899 he went to Cleveland as shipping clerk for the Lake Erie Works of the Republic Iron & Steel Company. In November, 1900, he joined the American Steel Hoop Company organization and came to the Carnegie Steel Company upon the formation of the United States Steel Corporation. He has been assistant to Mr. Wood since 1918.

Obituary

T. M. Ellis—M. J. Kinch

Two men prominent in early day development of Rockford, Ill., traction systems died on Dec. 3 within a few hours of each other. They were Thomas Milton Ellis, first general manager of the Rockford & Interurban Railway, and Melvin J. Kinch, superintendent of construction of the old Rockford, Beloit & Janesville Railway and later in the same capacity with the Rockford lines. Mr. Ellis was superintendent in 1887 of the Utica Belt Line, Utica, N. Y., and later went with the General Electric Company in Schenectady. In the late '90s he went to Rockford. In 1902, when the Rockford & Interurban was consolidated with the Rockford & Belvidere Electric Railway and Rockford Railway, Light & Power Company, he became superintendent, serving until its sale to the Commonwealth company in 1909, when he retired. Mr. Kinch was in charge of construction for the Rockford lines fourteen years and worked until his recent illness. Mr. Ellis died in Beloit at the age of 64 years. Mr. Kinch died in Rockford. He was 65 years old.

Anthony F. Connelly

Anthony F. Connelly, superintendent of city lines for the Louisville Railway, Louisville, Ky., and one of the pioneer men in the company's service, died at his home in that city on Nov. 3, following a two weeks illness. Mr. Connelly had been with the company and its predecessor, the Louisville City Railway, for 50 years, with the exception of a three-year period. For twenty years he was a company inspector, and in 1920 was made superintendent of city lines.

Mr. Connelly took out his first car for the Louisville City Railway on the Portland Avenue line, on Feb. 28, 1875, when he was eighteen years old.

He was made transfer man in 1886 and a traffic inspector later in the same year. In 1901 he became chief night inspector and in 1907 chief inspector, in which capacity he served until promoted to be assistant superintendent of transportation of the company in 1920.

Mr. Connelly was born in Wheeling, W. Va., 70 years ago. "Faithful Through the Years" was the caption over the leading article in *Trolley Topics*, the railway house organ, of Sept. 15, 1924, which gave a life history of Mr. Connelly.

Constantin de Burlet, who was president of the International Street Railway Association, with headquarters at Brussels, from 1911 to 1924, and was then elected honorary president of the association, died at Nivelles, Belgium, on Nov. 11. Mr. de Burlet had always taken a very active interest in the association and was a member of the executive committee from 1906 to 1911. For many years he was general manager of the Société Nationale des Chemins de Fer Vicinaux of Belgium, and recently had been honorary general manager of that company.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Industrial Agencies Will Handle Industrial Problems

That legislatures and courts will eventually be superseded by industrial agencies in the handling of industrial problems is the opinion of P. G. Agnew, secretary of the American Engineering Standards Committee, whose article, "How Business Is Policing Itself," appears in the *Nation's Business* for December. Much of the work of standardization, developing safety and commercial codes and meeting local and national problems of every industrial application may far more readily be handled by industry itself than through the tedious process of statutory law.

To keep specialized problems out of the reach of partisan politics on popular issues, to insure a careful and able consideration of difficult economic situations and to arrive at national trade agreements instead of local control, it is essential that the principles frequently urged by Herbert Hoover and emphasized by President Coolidge in his recent address before the New York Chamber of Commerce—of independence between government and business—be generally accepted. Of course, industry must continue to accept the mantle of responsibility in the work of standardization.

Mack Trucks Continues Policy of Plant Expansion

Mack Trucks, Inc., has materially expanded its Plainfield, N. J., plant with the recently announced purchase of a $13,000,000 factory from Niles-Bement-Pond Company, manufacturer of lathes and tools. No new additions to the production program are contemplated by Mack at this time and the additional space will simply be used to supplement the work of the former Plainfield plant. Engines for Mack trucks and buses are manufactured there and then shipped to the Allentown, Pa., factory, together with assembled transmission units from the New Brunswick plant. At Allentown the final process of assembling is carried out. Mack is now said to have the largest bus body plant in the world.

Cold Weather Lubrication of Buses

It has been stated that a bus may be reasonably expected to operate for distances of more than 100,000 miles between complete overhaul periods if properly lubricated. That the records of many fleet operators fall considerably below this mark is unquestionably due to insufficient attention to the important questions of oil and grease.

To emphasize the importance of this matter, in cold weather especially, lubrication of the bus is discussed in detail from this point of view in the November issue of *Lubrication*, published by the Texas Company, New York. Every phase of mechanical operation, including engine, electrical equipment and transmission, is gone into thoroughly and a list of recommendations made. The company points out particularly the advantages which follow the practice of draining crank cases every night and of subjecting the oil so removed to a process of repurification.

Economy of Tie Treatment

A pertinent discussion of the economy involved in treating ties and timber appears in the November issue of *Wood Preserving News*, published by the American Wood Preservers' Association of Chicago. The particular example of the Chicago & Eastern Illinois Railway is gone into in detail by L. C. Hartley, chief engineer. This road had used more than 4,500,000 ties preserved with zinc chloride and about 4,000,000 treated with creosote prior to 1925.

Great reduction has been accomplished in the number of tie renewals necessary since this program of treatment went into effect and a very material contribution to the conservation of timber has been made. The publication also contains curves and tables for measuring the life of ties.

What Is the Cost of a Renewal Part?

Manufacturers Could Lower Prices, Improve Quality and Better Deliveries if Railways Knew Their Requirements Accurately—Waste Due to Duplication of Effort and Multiplicity of Design

By H. R. Meyer
Development & Supply Division, Railway Department,
Westinghouse Electric & Manufacturing Company

ONLY during the past few years has the question of renewal part manufacture by railway companies begun to receive the consideration it truly deserves. Probably no one thing has done more to give impetus to this consideration than the necessity of finding ways and means to reduce maintenance costs. The establishment of renewal part sales and service by the manufacturer of the original equipment as a real business has also brought about a consideration of quantity manufacture from an economic standpoint.

Most of the discussions of this vital subject end with the question of how overhead affects the cost of a renewal part. This question is not only difficult to solve from the operators' standpoint, but it is one that is practically impossible to solve with present accounting systems. This point was ably brought out by H. E. Jordon in an article on "Home Made Products Cost Determination" which appeared in ELECTRIC RAILWAY JOURNAL Oct. 31. To carry his thought a little further it is evident that the I. C. C. did not consider the street railways as manufacturers as it made no provision for a true cost accounting in the system laid down.

While it is essential that the overhead be considered in arriving at a true cost of producing a part, several other things are equally vital. When talking in terms of cost little consideration seems to be given to the fact that cost is a function not only of labor, material and overhead, but of time or service. Too much stress should not be put on the initial cost, when it has finally been determined. It is the cost over the period of the life of the part that is important.

It is quite within the realm of possibility that many renewal parts can be made at a lower apparent cost by the railway company than that of an outside manufacturer. The outside manufacturer, however, can reduce the cost of a part by eliminating a number of the operations normally necessary for a high grade article. But the final question is, What service will that part give? Operating reports may show approximately the maintenance month after month. This, however, is no indication that the parts being used are giving the maximum service which can or should be obtained.

Record of Life of Parts Essential

As very few records of life of parts are kept, it is just as hard to obtain the true cost of a renewal part as it is to arrive at the correct overhead. Before a renewal part manufactured by a railway can be compared with that of an outside manufacturer who has a vital interest in the operation of the apparatus, it is absolutely essential that the life of the part over a period of years be known. It is not so difficult to obtain an average life of parts in new apparatus as there is usually a record of the first change, regardless of the part which it is used to replace. It is the record of subsequent changes and of the parts used which is not available in a form which will give the correct story.

The argument has been put forward that by manufacturing in their own shops it is unnecessary for the railways to carry a stock as large as would otherwise be required. This may be the real thought behind the practice, but experience has shown that the tendency is to manufacture in relatively large quantities to keep down the cost due to set-up, etc. When this happens the ability to take advantage of new design of old parts is eliminated. Also the stock of other important parts must be kept under requirements to keep down the total.

It is a well established fact that the

waste in this country due to duplication of effort and multiplicity of designs is enormous. Several years ago the attention of the federal government was focused on this appalling condition and a bureau was established to investigate the possibilities of waste elimination. That this movement has been justified is truly exemplified by the elimination of many brands and sizes for a given product. Mr. Hoover, with his unusually keen perception and energy, has obtained the interest and co-operation of many of our industries to the end that considerable progress has been made.

That the manufacture of renewal parts by the railways is fundamentally wrong from an economic standpoint will be readily appreciated when a thorough understanding exists of the function and requirements of a transportation company. A motor is designed and manufactured. Thought and time have been expended and drawings and tools made. After a few years of service the parts, drawings and tools may have been duplicated many times over by the operating companies and other manufacturers. This is waste.

Again it has been argued that as certain machine tools must be used for maintenance work, there will be times when they are idle and can, therefore, be used for the manufacture of parts. This may be good theory, but it would soon be found that the cost of the supplemental tools required, including jigs, fixtures, etc., would overshadow the initial investment in maintenance tools. Furthermore, the information in the way of drawings, etc., must be furnished and in many cases this is obtained from the defective part, resulting in a product that cannot in most cases give the life that should be expected. Maintenance tools are in most cases unsuitable for general manufacturing purposes. Many machine tools are warranted only where quantity production is possible.

Specialization and Quantity Production

In this age of quantity production and specialization it is essential that the men be trained to do certain work and to do it well. Yet in the manufacture of parts the railways must, to prove their case, transfer men trained in maintenance work to manufacturing processes and vice versa, to the detriment of either one or the other. Considering the many phases of this question of true costs, does it not seem logical that when, if ever, the question of overhead is settled, the picture will only be partially painted?

As a final consideration, call to mind once more the question of stocks and quantity. The manufacturers are carrying more and more items in their warehouses which will protect the operation and equipments. Adding of items to their stocks is, of course, based on probable use and activity. A fuller knowledge of requirements would increase their stocks faster and, therefore, afford better protection to the railways. By a broader system of records the railways would be in a position more nearly to determine their yearly requirements and, thereby, assist the manufacturers to produce in larger quantities. This would give the railways the advantage of a lower price, the high standard of quality used in new apparatus and good service on deliveries.

Purchase of Ohio Brass by Brown, Boveri Denied

An emphatic denial has been made by Laurence Wilder, president of Brown, Boveri & Company, New York, of the rumors which have lately been current in the matter of the reported purchase of the Ohio Brass Company, Mansfield, Ohio, and two other manufacturing concerns by Brown, Boveri.

Reclamation Proves Valuable

Substantial savings are being made by the railroads of the country through the reclamation of old materials, the purchase and stores division of the American Railway Association reports after a survey of the field. While every road in the country has made provisions for the reclamation of material, the savings vary, being contingent on the size of the road and its location with reference to the markets. The report says:

> As indicative, for instance, of the extent to which this work is being conducted, old metallic roofing and empty powder or carbide cans are converted into tin buckets, cups and other tinware, broken leaves from springs are made into elliptic springs, while dirty waste taken from journal boxes is cleaned and reoiled and again used.

November Good Month for Supplies Market and Contracts

Continued activity in the buying of track supplies marked the month of November. Rail orders were a trifle slower, following a recent spurt, but the prices remained practically constant. Especially was this true in standard rails, where prices remained at a figure current three years ago. A somewhat higher market in light and rerolled rails, spikes, track bolts and angle bars was indicated.

November was the fourth consecutive record month in money value of general construction contracts let and also showed the heaviest actual physical volume for that period since 1913. A 59 per cent gain over November of last year occurred, while the gain to date for this year is 25 per cent over last.

Metal, Coal and Material Prices

Metals—New York	Dec. 8, 1925
Copper, electrolytic, cents per lb	14.00
Copper wire base, cents per lb	16.00
Lead, cents per lb	9.25
Zinc, cents per lb	9.075
Tin, Straits, cents per lb	63.50
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$5.325
Somerset mine run, Boston, net tons	2.00
Pittsburgh mine run, Pittsburgh, net tons	2.05
Franklin, Ill., screenings, Chicago, net tons	1.875
Central, Ill., screenings, Chicago, net tons	1.425
Kansas screenings, Kansas City, net tons	2.30
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$7.00
Weatherproof wire base, N. Y., cents per lb	18.25
Cement, Chicago net prices, without bags	2.10
Linseed oil (5-bbl. lots), N. Y., per gal	0.9975
White lead in oil (100-lb. keg), N. Y., cents per lb	0.1550
Turpentine (bbl. lots), N. Y., per gal	$1.06

100-Ton Oil-Electric Locomotive Tested at Erie

An exhaustive demonstration was given in Erie, Pa., on Dec. 1 of the 100-ton oil-electric locomotive which has just been completed for the Long Island Railroad. This is the first locomotive of this type and tonnage to be built for an American railway and much interest centered on the tests given it by the builders, Ingersoll-Rand, General Electric Company and American Locomotive Company.

The tests were very comprehensive in nature and included hauling a train of loaded gondola coal cars and an observation car, a trailing load of more than 1,200 tons. While handling the entire train, it was started from the foot of the grade and also from the center of the grade. In another test, five of the loaded cars were hauled with two cylinders of one of the engines cut out. Switching operations were also conducted. Operation of the new unit on the Long Island lines will be undertaken shortly.

More Electric Locomotives for Paulista

Four electric locomotives have been ordered from Westinghouse and will be constructed by Baldwin for the Paulista Railway of Brazil.

Samuel M. Vauclain, president of Baldwin, anticipates a satisfactory volume of business for 1926 and believes that it will carry over into 1927. November orders received by the company approximated $7,000,000. This brings the total volume of unfilled business to the highest amount since the fall of 1923. During the first week in December a total of 55 orders for engines was received by Baldwin.

Interest Grows in Diesel Electric Installations

Two Diesel-electric engines, one passenger and one freight, are included in an order for rolling stock placed recently by the New York Central Railroad. That much interest is centering on this new form of motive power may be seen from the fact that this same road has just authorized the installation of Diesel-electric equipment in one of its standard passenger coaches, as outlined in the Dec. 5 issue of the JOURNAL. The locomotives will be furnished by the American Locomotive Company and McIntosh-Seymour Corporation.

Examples of Modern Railway Interlocking Installations

Mechanical interlockings are being installed by the Hydro-Electric Power Commission of Ontario at two intersections of its line with the Essex Terminal Railway, in the vicinity of Windsor, Canada. The equipment is being provided by the Union Switch & Signal Company, Swissvale, Pa., It will comprise, for each layout, signal and derail protection, with style N color light signals on the Hydro-Electric Railway and mechanical semaphore signals on

the Essex Terminal. Each plant involves a four-lever Saxby and Farmer machine for the control of two derails and four signals.

Extensive additions are also being made to the mechanical interlocking at Walkerville, just outside of Windsor. Here the Hydro-Electric Railway crosses the lines of the Père Marquette and the Essex Terminal within a few hundred feet of the spot where these two roads themselves intersect. The original interlocking plant is being expanded by the Union Switch & Signal Company to incorporate protection for all intersections.

Rolling Stock

Tampa Electric Company, Tampa, Fla., it is reported, has purchased seven new double-truck cars.

Pennsylvania-Ohio Electric Company, Youngstown, Ohio, has announced specifications on the thirteen new cars ordered for the Youngstown Municipal Railway, reference to which was made in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 10, 1925, page 660. The details follow:

Date order was placed	Oct. 1, 1925
Date of delivery	Begin Jan. 2, 1926
Builder of car body	Kuhlman
Type of car	Double-end motor car
Seating capacity	44
Weights:	
Car body	17,000 lb.
Trucks	8,800 lb.
Equipment	7,000 lb.
Total	32,800 lb.
Bolster centers, length	20 ft. 4 in.
Length over all	43 ft. 0 in.
Truck wheelbase	4 ft. 10 in.
Width over all	8 ft. 6 in.
Height, rail to trolley base	10 ft. 5 in.
Body	Semi-steel
Interior trim	Mahogany
Headlining	Agasote
Roof	Arch
Air brakes	General Electric
Car signal system	Faraday
Car trimmings	Polished bronze
Center and side bearings	Brill
Compressors	CP-27
Control	K-35 KK
Destination signs	Hunter
Door-operating mechanism	National Pneumatic
Fenders or wheelguards	Eclipse
Hand brakes	Peacock
Heater equipment	Railway Utility
Headlights	Golden Glow SR-95
Journal boxes	Brill
Lightning arresters	Westinghouse
Motors	Four Westinghouse 508-A, inside hung
Paint	Duco
Sanders	Nichols-Lintern
Sash fixtures	Rex
Seats	Brill
Seating material	Genuine leather
Step treads	Kass
Trolley catchers	Ohio Brass
Trucks	Brill 177-E-1
Ventilators	Nichols-Lintern
Wheels	26-in. Pitts. forged steel
Special devices	Ivanhoe short-circuiting light fixtures

Westside Electric Street Railway, Charleroi, Pa., recently received the six new cars ordered in June. The details of the cars follow:

Builder of car body	Kuhlman
Type of car	Double-end motor
Seating capacity	46
Weights:	
Car body	15,500 lb.
Trucks	11,000 lb.
Equipment	8,560 lb.
Total	35,060 lb.
Bolster centers, length	19 ft. 0 in.
Length over all	41 ft. 2 in.
Truck wheelbase	5 ft. 4 in.
Width over all	8 ft. 4 in.
Height, rail to trolley base	10 ft. 9½ in.
Body	Semi-steel
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse
Car signal system	Faraday
Car trimmings	Polished bronze
Center and side bearings	Brill
Compressors	DH-16
Control	K-35
Destination signs	Hunter
Door-operating mechanism	National Pneumatic
Fenders	Steel pilot
Hand brakes	Peacock staffless
Heater equipment	Peter Smith forced draft
Headlights	Crouse-Hinds
Journal boxes	Brill 3¼x6-in.
Lightning arresters	Westinghouse
Motors	Four Westinghouse 501-A, inside hung
Sanders	Nichols-Lintern
Sash fixtures	Brill renitent
Seats	Brill
Seating material	Rattan
Springs	Brill
Step treads	Kass
Trolley catchers	Ohio Brass
Trucks	Brill 77-EX
Ventilators	Brill
Wheels	26-in. rolled steel

Minneapolis Street Railway, Minneapolis, Minn., has included in its 1926 improvement program the construction of two new street cars of the "lightweight" type. Drawings are complete and the first of the cars will be ready for operation early next year. Two such cars have been in use for experimental purposes for some time. The new cars will embody all improvements discovered in the experiments. These cars will be of approximately the same weight, 25,000 lb., and will have the same seating capacity, 48 passengers.

Track and Line

Nashville Railway & Light Company, Nashville, Tenn., will extend its Jefferson Street line from its present terminus to the front gate of the State A and I Normal School, a distance of something more than half a mile. The railway expects to begin work on the extension early next spring. The city will, on its part, rebuild this section from Eighteenth Avenue to the Normal.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has completed at a cost of $45,000 double tracks on Sixth Street from Wells to Cedar Street.

Pacific Gas & Electric Company, Sacramento, Cal., is laying tracks for the loop from the Southern Pacific Company's property at Third and I Streets to the new railroad station. Under the new routing plan of the company all but two or three car lines in the city will converge at the station entrance.

Southern Public Utilities Company, Charlotte, N. C., recently completed a special track job at Independence Square in Charlotte. The total cost of the repair and replacement was said to be more than $5,000. In addition to the manganese steel a considerable quantity of concrete and approximately 10,000 vitrified paving bricks were used.

Trade Notes

Johns-Manville, Inc., New York, manufacturer of asbestos products, will establish a manufacturing plant in Cincinnati. The company has purchased the portion of the Pollak Steel Company's plant which was erected during the war. Further units will be added later, it was announced.

W. F. Horsting has been appointed general sales manager of the Johnson Fare Box Company with headquarters in Chicago. Mr. Horsting is president of the newly organized Gasoline Register Company, exclusive selling agent for a registering service used on gasoline pumps in filling stations. This is being manufactured by the Johnson Fare Box Company. Horace T. Howell, formerly sales manager and engineer, will have the new title of executive engineer.

J. G. Brill Company, Philadelphia, Pa., has been considering the matter of improving the appearance of the average street car dasher. The company proposes to abolish the haphazard sign and the non-standard rack. In their places Brill would substitute a uniform frame for displaying direction and poster cards. This frame, now being placed on the market in lots of 500, may be varied to meet local requirements, but the design and general appearance will be uniform.

Henry C. Houck, assistant general merchandise manager of the General Electric Company, has been appointed manager of the merchandise department at the Bridgeport works of the company. Mr. Houck entered the employ of the company in 1899 in the testing department. In 1902 he was sent to the Cleveland office as lighting apparatus salesman. In the ten years that followed he became manager of the supply department in the Cincinnati district and later assistant district manager. In 1912 he was recalled to Schenectady as assistant manager of the supply department. 1922, when the merchandising department was formed, he was made assistant to G. P. Baldwin, then manager, but now a vice-president in charge of railroad electrification activities.

New Advertising Literature

Ohio Brass Company, Mansfield, Ohio, has issued an illustrated leaflet in which the advantages of National railway trolley guards are stressed. The guards are designed to do away with the dangers of trolley dewirement at grade crossings and elsewhere.

General Electric Company, Schenectady, N. Y., has issued bulletin GEA-197, describing the type D-54 mechanical drive turbine, intended for the driving of centrifugal pumps, blowers and other classes of mechanical drives.

Portland Cement Association, Chicago, Ill., has issued a reprint of a report presented by the committee on precast concrete units before the 35th annual convention of the American Railway Bridge and Building Association in Buffalo. The paper, entitled "The Use of Precast Units," contains discussions of central plant advantages, various precast applications and a summary of railroad practice in this field. Copies of the report may be obtained from the association.

General Electric Company, Schenectady, N. Y., describes General Electric steam turbines rated at 500, 600 and 750 kw. in Bulletin GEA-235, just issued. The general principles and advantages of steam turbines are discussed and sections and steam path diagrams are shown.